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14 Attorneys for Plaintiff SANTA CLARITA VALLEY  
15 WATER AGENCY

16 UNITED STATES DISTRICT COURT  
17 CENTRAL DISTRICT OF CALIFORNIA

18 SANTA CLARITA VALLEY WATER  
19 AGENCY,

20 Plaintiff,

21 vs.

22 WHITTAKER CORPORATION and  
23 DOES 1-10, Inclusive,

24 Defendant.

25 AND RELATED CASES

Case No: 2:18-cv-6825 SB (RAOx)

*Assigned to Hon. Stanley Blumenfeld,  
Jr.*

**DECLARATION OF BYRON GEE  
IN SUPPORT OF SCV WATER'S  
MOTIONS IN LIMINE**

Date Action Filed: August 8, 2018

Trial Date: August 24, 2021

1 I, Byron P. Gee, declare as follows:

2 1. I am an attorney and partner at the law firm of Nossaman LLP, and  
3 counsel of record for Plaintiff Santa Clarita Valley Water Agency ("SCV Water")  
4 in the above-captioned action. I am a member in good standing of the State Bar of  
5 California and have been admitted to practice before this Court. I have personal  
6 knowledge of the facts set forth in this Declaration, and, if called as a witness,  
7 could and would testify competently to such facts under oath. I make this  
8 Declaration in support of SCV Water's Motions in Limine ("Motions") served on  
9 July 13, 2021.

10 2. On January 31, 2020, Whittaker and SCV Water exchanged  
11 disclosures of expert witnesses pursuant to FRCP 26. A true and correct copy of  
12 the disclosure Whittaker served on January 31, 2020 is attached hereto as Exhibit  
13 A.

14 3. A true and correct copy of the disclosure SCV Water served on  
15 January 31, 2020 is attached hereto as Exhibit B.

16 4. On August 3, 2020, the parties exchanged expert witness reports  
17 pursuant to FRCP 26.

18 5. On September 9, 2020, the parties exchanged expert witness rebuttal  
19 reports pursuant to FRCP 26.

20 6. Attached to my declaration are the following additional reports and  
21 documents in support of SCV Water's Motions:

22 **Expert Reports**

23 7. Attached hereto as Exhibit C is a true and correct copy of excerpts of  
24 the expert report of SCV Water's expert witness Phyllis Stanin.

25 8. Attached hereto as Exhibit D is a true and correct copy of excerpts of  
26 the expert report of Whittaker's expert witness Anthony Daus.

27  
28

1           9. Attached hereto as Exhibit E is a true and correct copy of the expert  
2 report of Whittaker's expert witness Gaynor Dawson (without CV and  
3 attachments).

4 **Rebuttal Reports**

5           10. Attached hereto as Exhibit F is a true and correct copy of excerpts of  
6 the expert rebuttal report of SCV Water's expert witness Phyllis Stanin.

7           11. Attached hereto as Exhibit G is a true and correct copy of the expert  
8 rebuttal report of SCV Water's expert witness Richard Hughto.

9           12. Attached hereto as Exhibit H is a true and correct copy of the expert  
10 rebuttal report of SCV Water's expert witness Mark Trudell.

11           13. Attached hereto as Exhibit I is a true and correct copy of the expert  
12 "rebuttal" report of Whittaker's expert witness Duane Steffey.

13 **Deposition Testimony**

14           14. Attached hereto as Exhibit J is a true and correct copy of excerpts of  
15 the deposition testimony of Whittaker's expert witness, Gary Hokkanen, dated  
16 September 29, 2020.

17           15. Attached hereto as Exhibit K is a true and correct copy of excerpts of  
18 the deposition testimony of Whittaker's expert witness, Anthony Daus, dated  
19 September 24, 2020.

20           16. Attached hereto as Exhibit L is a true and correct copy of excerpts of  
21 the deposition testimony of Whittaker's expert witness, Gaynor Dawson, dated  
22 September 19, 2020.

23           17. Attached hereto as Exhibit M is a true and correct copy of excerpts of  
24 the deposition testimony of Whittaker's expert witness, Daniel Shoup, dated  
25 September 25, 2020.

26           18. Attached hereto as Exhibit N is a true and correct copy of excerpts of  
27 the deposition testimony of Richard Slade, dated February 6, 2020.

28

1           19. Attached hereto as Exhibit O is a true and correct copy of excerpts of  
2 the deposition testimony of Whittaker's expert witness, Duane Steffey, dated  
3 October 2, 2020.

4 **Other Reports and Documents**

5 **Hydrogeological Documents**

6           20. Attached hereto as Exhibit P is a true and correct copy of the  
7 document entitled October 16, 1982 Letter from Zoyd Luce to DHS.

8           21. Attached hereto as Exhibit Q is a true and correct copy of excerpts of  
9 the document entitled Remedial Action Plan Operable Unit 7 – Groundwater  
10 Former Bermite Facility, prepared by Whittaker's consultant AECOM, dated  
11 December 2014.

12           22. Attached hereto as Exhibit R is a true and correct copy of  
13 correspondence from hydrogeologist Robert Bean to Zoyd Luce, dated December  
14 4, 1982.

15           23. Attached hereto as Exhibit S is a true and correct copy of excerpts of  
16 the document entitled Memorandum re Meeting of June 17, 1987 with Gordon  
17 Louttit, Joe Alibrandi, John Peloquin, Glenn Abner and myself, prepared by  
18 Christopher F. Thompson.

19           24. Attached hereto as Exhibit T is a true and correct copy of excerpts of  
20 the report entitled Groundwater Regulation and Pollution Sources in Santa Clarita,  
21 1987-1988, prepared by Whittaker's consultant Archaeological/Historical  
22 Consultants.

23           25. Attached hereto as Exhibit U is a true and correct copy of the  
24 document entitled Statement of Qualification of Dr. Daniel Shoup, prepared by  
25 Whittaker's consultant Archaeological/Historical Consultants, dated July 2020.

26           26. Attached hereto as Exhibit V is a true and correct copy of the  
27 document entitled Envirostor Report for Thatcher Glass Manufacturing Company.  
28



1           27. Attached hereto as Exhibit W is a true and correct copy of  
2 correspondence from Nancy J. Long of the California Department of Toxic  
3 Substances Control to Theodora Berger of the Attorney General's Office, dated  
4 November 29, 1995.

5           28. Attached hereto as Exhibit X is a true and correct copy of excerpts of  
6 the Powerpoint presentation entitled Groundwater Flow Model Update, presented  
7 by Hassan Amini and Panday Sorah, dated February 26, 2019.

8           29. Attached hereto as Exhibit Y is a true and correct copy of email  
9 correspondence exchanged between Hassan Amini and Daniel Craig attaching the  
10 above referenced Powerpoint presentation attached as Ex. X, dated February 22,  
11 2019.

12           30. Attached hereto as Exhibit Z is a true and correct copy of excerpts of  
13 reports entitled Groundwater Monitoring Reports, including excerpts of figures  
14 depicting groundwater flow, prepared by Whittaker's consultant AECOM, dating  
15 from 2011 to 2019.

16           31. Attached hereto as Exhibit AA is a true and correct copy of figures  
17 entitled Potentiometric Surface Map included as Hokkanen Deposition Exhibits  
18 316 and 318, dated May 2019.

19 **Unrelated Litigation Documents**

20           32. Attached hereto as Exhibit BB is a true and correct copy of excerpts  
21 of the report entitled Supplemental Report Concerning Non-Perchlorate  
22 Contamination, dated November 16, 2009.

23           33. Attached hereto as Exhibit CC is a true and correct copy of  
24 highlighted excerpts of the deposition testimony of Whittaker's expert witness,  
25 Gaynor Dawson, dated September 19, 2020, with every reference to "findings of  
26 facts" highlighted.

27           34. Attached hereto as Exhibit DD is a true and correct copy of excerpts  
28 of the deposition testimony of Jack H. Arnold, dated April 5, 2002.

**Additional Expert Reports**

35. Attached hereto as Exhibit EE is a true and correct copy of excerpts of the expert report of Whittaker's expert witness Gary Hokkanen.

36. Attached hereto as Exhibit FF is a true and correct copy of excerpts of the expert report of Whittaker's expert witness Steven Luis.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and that this declaration was executed on July 23, 2021 at Los Angeles, California.



BYRON P. GEE

**EXHIBIT A**

FRED M. BLUM, ESQ. (SBN 101586)  
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Attorneys for Defendant and Third Party Plaintiff  
WHITTAKER CORPORATION

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

SANTA CLARITA VALLEY WATER  
AGENCY,

Plaintiffs,

vs.

WHITTAKER CORPORATION and  
DOES 1-10, inclusive

Defendants.

WHITTAKER CORPORATION,

Third-Party Plaintiff,

vs.

KEYSOR-CENTURY CORP., a  
California Corporation; and SAUGUS  
INDUSTRIAL CENTER, LLC, a  
Delaware Limited Liability Company,

Third-Party Defendants.

Case No. 2:18-CV-6825-GW (RAOx)

*Assigned to Hon. George H. Wu*

**WHITTAKER CORPORATION'S  
DISCLOSURE OF EXPERTS**

Date: January 31, 2020

Action Filed: August 8, 2018

Trial Date: June 23, 2020

1 Pursuant to an agreement as stipulated between WHITTAKER  
2 CORPORATION, SANTA CLARITA VALLEY WATER ASSOCIATION  
3 (SCVWA), and SAUGUS INDUSTRIAL CENTER, LLC, (SIC) WHITTAKER  
4 CORPORATION discloses:

5 **1. Anthony Daus, P.G., BCES – GSI Environmental:**

6 Mr. Daus will provide opinions and testimony with regards to the investigation  
7 and remediation of the Whittaker-Bermite property and its effect on the fate and  
8 transport of contaminants.

9  
10 **2. Daniel D. Shoup, PhD, RPA– Archaeological/Historical Consultants:**

11 Mr. Shoup will provide opinions and testimony with regards to the historical  
12 activities and development of the areas surrounding SCVWA's wells and water  
13 systems and the SIC site as well as other possible sources of contamination.

14  
15 **3. Peter Mesard, P.E., P.G. – Exponent :**

16 Mr. Mesard will provide opinions with regard to SCVWA's adherence to and  
17 compliance with the National Contingency Plan in regard to those costs claimed as  
18 damages by SCVWA.

19  
20 **4. Steven Luis, P.E. – Ramboll US Corporation:**

21 Mr. Luis will provide opinions and testimony with regards to SCVWA's  
22 process, procedure and selection of well site locations, compliance with the  
23 applicable standard of care, operation of its water delivery system including  
24 permitting processes, procedures and well construction for those wells which  
25 SCVWA claims have been impacted by Whittaker's activities.

1       **5. Gary Hokkanen – EKI Environment & Water:**

2       Mr. Hokkanen will provide opinions and testimony with regards to fate,  
3 transport, hydrology, hydrogeology and sources of contamination at issue. He will  
4 also provide opinions and testimony with regard to the sources of contamination  
5 that have allegedly impacted the water wells at issue.  
6

7       The general descriptions of the topics and subject matter provided for each  
8 expert shall not limit or otherwise prevent an expert from developing, expanding  
9 and providing opinions and testimony related to the subject matter area for which  
10 the expert has been disclosed. Furthermore, each of the above experts will offer  
11 rebuttal testimony to experts retained by SIC and/or SCVWA. Whittaker reserves  
12 the right to call any expert disclosed by any other party.  
13

14       Date: January 31, 2020       BASSI, EDLIN, HUIE & BLUM LLP  
15

16  
17       By: \_\_\_\_\_/s/\_\_\_\_\_  
18       EARL L. HAGSTRÖM  
19       Attorneys for Defendant  
20       WHITTAKER CORPORATION  
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28

**EXHIBIT B**

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9 Attorneys for Plaintiff SANTA CLARITA VALLEY  
10 WATER AGENCY

11  
12 UNITED STATES DISTRICT COURT  
13 CENTRAL DISTRICT OF CALIFORNIA  
14

15 SANTA CLARITA VALLEY WATER  
16 AGENCY,

17 Plaintiff,

18 vs.

19 WHITTAKER CORPORATION and  
20 DOES 1-10, Inclusive,

21 Defendant.  
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Case No: 2:18-cv-6825 GW (RAOx)

*Assigned to Hon. George H. Wu*

**PLAINTIFF'S INITIAL  
DISCLOSURE OF EXPERT  
WITNESSES**

Date Action Filed: August 8, 2018

Trial Date: None Set



Pursuant to the Court’s Order on November 19, 2019, and in compliance with Rule 26(a)(2)(C) of the Federal Rules of Civil Procedure, Plaintiff Santa Clarita Valley Water Agency (“SCVWA”) identifies the following experts by name and affiliation, along with a general description of the subject areas upon which they intend to testify:

**Retained Experts**

**1. Edwin Granberry**, of Granberry and Associates, who will address Whittaker’s (pre-1987 closure) waste disposal practices and its (non)compliance with regulatory requirements and industry standards.

**2. Phyllis Stanin**, of Todd Groundwater, who will address contamination pathways from the Whittaker site to Plaintiff’s wells and the impact of Whittaker onsite treatment wells on offsite groundwater contamination.

**3. Lynn Takaichi**, of Water Consultancy, who will address the treatment system requirements to address volatile organic compounds (“VOCs”) and perchlorate contamination.

**4. Mark Trudell**, of Adisian, who will address the source(s) of VOC contamination found in Plaintiff’s wells as well as transport characteristics of VOCs.

**5. Jeff Zelikson**, of Nathan, Inc., who will address compliance with the National Contingency Plan and the hazardous nature of perchlorate, trichloroethylene (“TCE”), and tetrachloroethylene (“PCE”).

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1 Additional witnesses may be required to address Defendant Whittaker  
2 Corporation's Counterclaim once more information is discovered regarding the  
3 allegations therein.

4  
5 Date: January 31, 2019

NOSSAMAN LLP  
FREDERIC A. FUDACZ  
BYRON GEE  
PATRICK J. RICHARD  
TARA E. PAUL

6  
7  
8 By: /s/ Tara E. Paul

9 Tara E. Paul  
10 Attorneys for Plaintiff SANTA  
11 CLARITA VALLEY WATER  
12 AGENCY  
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**EXHIBIT C**

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## **EXPERT REPORT OF PHYLLIS S. STANIN**

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**SANTA CLARITA VALLEY WATER AGENCY,  
PLAINTIFF, VS. WHITTAKER CORPORATION  
AND DOES 1-10, INCLUSIVE; DEFENDANTS**

**UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA**

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**August 3, 2020**

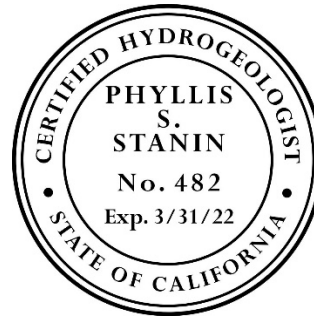
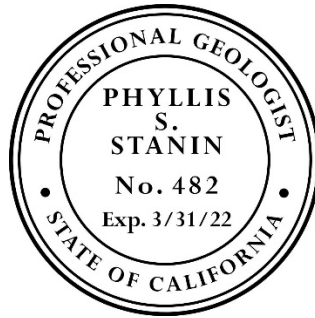
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**Phyllis S. Stanin, PG, CEG, CH  
Vice President, Principal Geologist  
TODD GROUNDWATER  
2490 Mariner Square Loop, Suite 215  
Alameda, CA 94501  
510.747.6920  
<http://www.toddgroundwater.com>**

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## SIGNATURE PAGE

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*Phyllis S. Stanin*

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Phyllis S. Stanin, Vice President/Principal Geologist

Todd Groundwater

As indicated in **Table 3**, most of these categories are associated with both VOCs and perchlorate. This association indicates the likelihood of co-located source areas and also indicates that VOCs and perchlorate releases to the environment have occurred in some of the same areas on the Whittaker Site.

#### 4.4. VOCs IN SOIL AND SOIL GAS

Environmental investigations began in the mid- to late-1980s when Whittaker Site operations stopped, and Site demolition began. By this time, TCE and PCE had been used, stored and disposed of for decades. Investigations confirmed the presence of TCE and PCE in soil, soil gas and groundwater.

Hargis and Associates, Inc. (1999) reviewed soil and groundwater data compiled by AME from various investigations beginning in 1995. Data were used to identify constituents of concern and potential source areas for groundwater impacts in order to guide future investigations. Several VOCs, including TCE and PCE, were identified as constituents of potential concern for impacts to groundwater.

**Figure 9** is a map reproduced from Hargis (1999) showing TCE detections in soil, based on the AME database. As shown on **Figure 9**, TCE concentrations in soil are categorized based on soil screening levels to prioritize areas of investigation. The highest concentrations of TCE in soil were found in OU-3 within the Burn Valley (Area 14), western edge of OU-1B, central western area of OU-2 and in OU-4 near the Hula Bowl (a series of steep ravines where wastes were dumped; see **Figure 8**).

Hargis (1999) identified other VOCs of concern, including PCE, 1,1,1-trichloroethane (1,1,1-TCA) and cis-1,2-dichloroethylene (cis-1,2-DCE). Similar maps for these three VOCs show that detections of these VOCs are similarly located with the TCE detections (Hargis, 1999).

In 2006, CDM completed a Site-Wide Remedial Investigation in OU-2 through OU-6 that identified VOC impacts in soil throughout the Site (CDM Smith, 2006). Several areas in each OU had elevated concentrations of VOCs in soil and soil gas (CDM Smith, 2006):

- OU2/OU6: Areas 1 and 54 – elevated TCE in soil and soil gas
- OU3: Areas 14 and 30 – elevated PCE and TCE in soil, TCE and 1,1-DCE in soil gas
- OU4: Area 16 (Hula Bowl Canyon) – elevated TCE in soil and soil gas
- OU5: Areas 2, 33, 45, and 48/49 – elevated TCE and PCE in soil and soil gas

The VOC impacts in several of these areas extended beyond a depth of 40 feet: Area 1 (226 feet), Area 54 (120 feet), Area 14 (200 feet), Area 30 (200 feet), Area 16 (170 feet), Area 2 (140 feet), Area 33 (60 feet) and Area 45 (62 feet) (CDM Smith, 2006).

In 2010, CDM completed a Remedial Action Plan for OU-2 through OU-6 (CDM, 2010) and mapped areas at the Site where VOCs exceeded soil gas risk-based threshold concentrations (RBTCs) and soil screening levels (SSLs) in the upper 100 feet of soil. There are 24 VOC impacted areas that were mapped by CDM Smith (2013) as shown on **Figure 10**. The primary VOCs detected in soil and soil gas at the Site are TCE and PCE (CDM Smith, 2013).

These priority areas shown on **Figure 10** provide a reasonable spatial accounting of the largest VOC sources for the purposes of remediation and source control on the Whittaker Site. However, as indicated by the evidence summarized above, areas on **Figure 10** do not represent a comprehensive mapping of all areas where VOCs could have infiltrated surficial deposits, percolated to the regional water table, and migrated downgradient toward SCVWA water supply wells.

In the 2010 Remedial Action Plan for Operable Units 2 through 6, CDM estimated the depths, volumes and mass of VOCs and other chemicals of potential concern (COPC) to be removed from soil. These estimates were for priority areas based on exceedances of RBTCs or SSLs. The estimated mass of VOCs in soils prioritized for remediation by operable unit is summarized in the following table (CDM Smith, 2010).

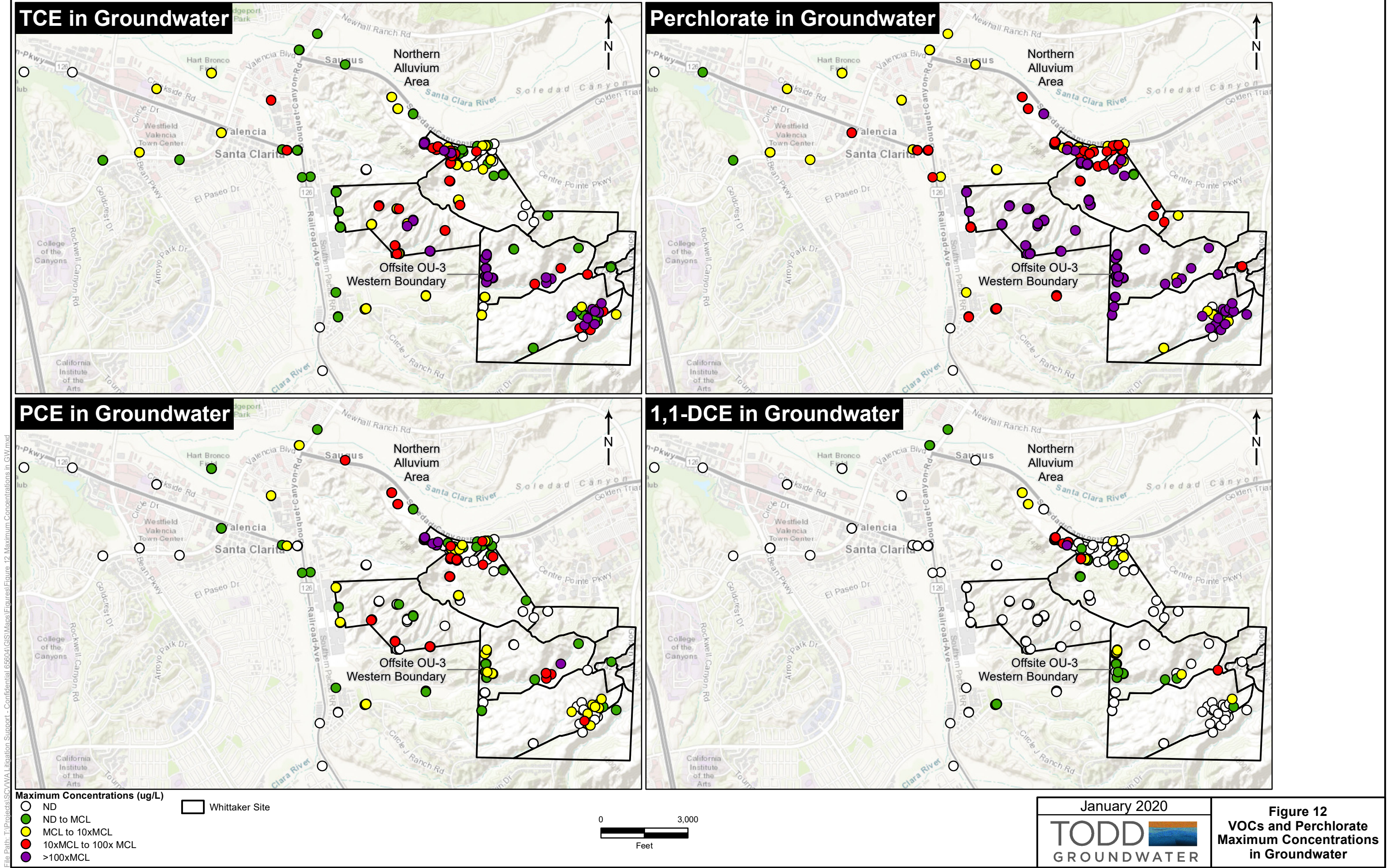
**Table 4. Risk-Based Mass of VOCs Prioritized for Remediation**

| <i>Operable Unit</i> | <i>Estimated Mass of VOCs<br/>in Soil (lbs)</i> |
|----------------------|---|
| OU-2                 | 2,688   |
| OU-3                 | 259,498   |
| OU-4                 | 135   |
| OU-5                 | 850   |
| <b>Total</b>         | <b>263,171</b>                                  |

Approximately 98.6 percent (259,486 pounds) of the total estimated mass of VOC-impacted soils at the Whittaker Site was identified in the Burn Valley (Area 14) of OU-3. In Area 14 soil, TCE was detected up to 1,200 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) and PCE was detected up to 3,100,000  $\mu\text{g}/\text{kg}$  (CDM Smith, 2010). These VOC impacts extended beyond a depth of 200 feet (CDM Smith, 2010).

In addition, there are 13 other areas where residual VOC mass exceeded RBTCs but were impractical for the soil vapor extraction (SVE) remedy; for those areas, mass was not estimated and would be additive to the estimates on **Table 4**. As stated in CDM Smith (2010), these areas will be re-evaluated if residential or commercial land uses are planned for the future.







**EXHIBIT D**

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## **EXPERT REPORT OF ANTHONY D. DAUS, III, PG, BCES**

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**U.S. District Court, Central District of California  
Southern Division  
No.: 2:18-cv-6825**



**Issued: 3 August 2020**

**Prepared for: Bassi Edlin Huie & Blum**

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**GSI Environmental Inc.**

19200 Von Karman Avenue, Suite 800, Irvine, CA 92612 tel. 949.679.1070

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Expert Report of Anthony D. Daus, III, PG, BCES  
Santa Clarita Valley Water Agency vs. Whittaker Corporation  
Case No.: 2:18-cv-6825

**Prepared for:**

Bassi Edlin Huie & Blum  
515 S. Flower Street  
Suite 1020  
Los Angeles, CA 90071

**Prepared by:**

**GSI Environmental Inc.**

19200 Von Karman Avenue, Suite 800  
Irvine, CA 92612  
949.679.1070

**GSI Job No. 5375**

Issued: 03 August 2020

A handwritten signature in black ink, appearing to read "AD Daus".

---

**Anthony D. Daus, III, PG, BCES**

03 August 2020

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**Date:**

Irvine, California U.S.A.

---

**Location**

---

GSI Job No. 5375  
Issued: August 3, 2020



### 3.0 TECHNICAL BACKGROUND

A summary of the Site description, historical operations, geology, hydrogeology, the nature of the VOC impacts to groundwater and their fate and transport, and a discussion of the regulatory oversight are provided in this section.

#### 3.1 Site Description

The Site is located at 22116 Soledad Canyon Road in Santa Clarita, California (Figure 1). It consists of 996 acres of land within an area of steep hillsides, drainages, and canyons lying at elevations ranging from 1,200 to 1,700 feet above mean sea level (amsl) (CDM Smith, 2012c). Over the course of Site decommissioning activities since early 1980s, all but a handful of Site buildings have been removed. Currently, the Site is largely vacant and undeveloped with chaparral cover over the undisturbed portions of the Site.

The main stem of Santa Clara River runs along the Soledad Canyon Road beyond northern property boundary. A commuter rail station has been built on an approximate 10-acre parcel located in the northern area of the property along Soledad Canyon Road. The South Fork of the Santa Clara River lies near the western Site boundary and west of a commercial/industrial area. Land use in the vicinity of the Site is mixed consisting of retail commercial, light industry, and residential (CDM Smith, 2006).

For Site investigation, remediation and management purposes, the Site was divided into Operable Units (OU) 1 through 7 in 1999, where OU-1 through OU-6 consist of the soil media at areas across the Site. OU-7 was defined as groundwater and surface water contaminated by Site constituents including VOCs (DTSC, 1999 and 2001) (Figure 1). Perched groundwater was later classified as OU-7 (AECOM, 2014).

#### 3.2 Overview of Historical Operations

From 1934 to 1987, Site manufacturing operations used hundreds of buildings and various areas within the property for the production of munitions and explosives, including dynamite, fireworks, and photoflash devices (CDM Smith, 2012c; AME, 1997).

Whittaker ownership and operation of the Site began in 1967 (AME, 1997). The Site has been inactive since 1987. Between 1967 and 1987, the Bermite facility manufactured ordnance products in the general categories listed below:

- Ammunition rounds
- Detonators, fuses, and boosters
- Flares and signal cartridges
- Glow plugs, tracer, and pyrophoric pellets
- Igniters, ignition compositions, and explosive bolts
- Power charges
- Rocket motors and gas generators
- Missile main charges

The manufacturing processes included the use and disposal of various chemicals including perchlorate, metals, and chlorinated solvents. The chlorinated solvents, which is the focus of my analysis, include PCE and TCE. This disposal resulted in VOC source areas located around the Site.

**EXHIBIT E**

Santa Clarita Valley Water Agency

v.

Whittaker Corporation and Does 1-10 Inclusive

EXPERT REPORT


OF

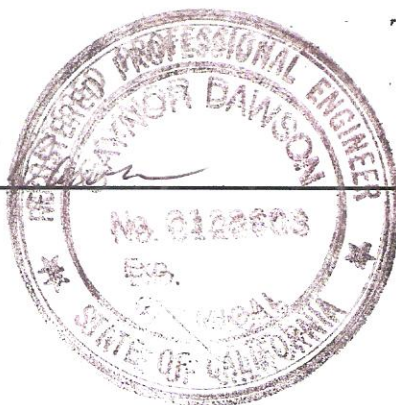
GAYNOR DAWSON


GWD CONSULTING, LLC

64209 E. Grover PR NE

WEST RICHLAND WA 99353

  
Gaynor W. Dawson



  
1 Aug 2020

In reaching the opinions expressed here, I used and applied industry-accepted methodologies in the manner I have learned through my education and professional experience and practices. After review of the materials noted in Attachment A and consideration in light of my experience and knowledge in my areas of expertise, I hold the opinions provided in this report to a reasonable degree of scientific certainty.

#### Opinion 1

The overwhelming majority of releases of perchlorate and chlorinated solvents at the Bermite site were associated with the production of Sidewinder and Chaparral missiles, and to a lesser extent. JATO rockets.

#### Opinion 2

I have seen no clear evidence that the missiles and rockets produced at the Bermite facility were not made in accordance with contract requirements mandating adherence to military specifications and the US Department of Defense DOD Contractors' Safety Manual for Ammunition, Explosives and Related Dangerous Materials dated October 1968 or their revisions released in 1986 and 1997, which would have constituted due care and the state of practice for those operations in those time frames.

#### Opinion 3

There is no indication that any significant quantities of perchlorate or chlorinated solvents were intentionally buried on site or in proximity to the Bermite facility.

#### Opinion 4

The most likely sources of significant perchlorate losses at the Bermite facility were: 1) Atmospheric dusts and washdown water from the operation of grinding operation bag houses; and 2) Waste water from hog out operations and JATO production.

#### Opinion 5

The most significant source of chlorinated solvent losses at the Bermite facility was effluent from the water separator unit on vapor degreasers used in the production of missile motors, while smaller contributions were made from solvent bearing wash waters.

### IV. Background and Data

#### Opinion 1

In his 2010 declaration, Dr. Jay Brigham, an expert in historical research (Case No.: CV-09-1734 AHM (RZx)) after exhaustive research in the archives, found that there was no evidence suggesting that perchlorate or trichloroethylene (TCE) were used on the Bermite site during World War II. According to Robert Zoch, prior to 1959, only small amounts of perchlorate were used on site. After 1959, production of Jet Assisted Take Off (JATO) rockets included use of perchlorates, but the usage was small in comparison with what was required for subsequent production of over 25,000 Sidewinder and Chaparral missiles. (Zoch, 2009, page 13)

In its Findings of Fact and Conclusions of Law during the Post-Trial Liability Phase, the United States District Court Central District of California (Case No. : CV 09-01734 AHM (RZx)) concluded that the Bermite facility handled in excess of 1.4 million pounds of ammonium perchlorate in the production of Sidewinder and Chaparral missiles (page 8 of 57) and the recovery/rehabilitation of over 1100 Chaparral motors (page 11 of 57).

Chlorinated solvent use including first TCE (up until the late 1970s) then perchloroethylene (PCE) (Authorized in late 1970s) and then 111, trichloroethane (TCA) (authorized in 1982) increased significantly with the production of Sidewinder and Chaparral missiles due to solvent application as a degreasing agent for rocket motors and in the cleaning of mixers and related equipment employed in rocket production (Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 9 of 57). This is consistent with my experience performing investigations and forensic analyses on solid rocket sites operated by Aerojet, UTC and Lockheed. These solvents were often detailed in the military specifications (Mil Specs) with which contractors were required to comply as a key part of the production contract.

Given this evidence, it is my opinion that the overwhelming majority of releases of perchlorate and chlorinated solvents at the Bermite site were associated with the production of Sidewinder and Chaparral missiles, and to a lesser extent. JATO rockets.

## Opinion 2

In its post-trial deliberations for assigning liability at the Bermite site, the US District Court for the Central District Court of California concluded: *Bermite was required to comply with the Department of Defense Contractors' Safety Manual for Ammunition, Explosives and Related Dangerous Materials DOD 4145.26M ("DOD Safety Manual") with respect to all contracts Bermite entered into with the United States Military. 2/26/10 AM Tr. 717:13-719:9 (Tamada); Calkins Decl. ¶ 93. The surviving rocket motor contracts either expressly stated that Bermite "shall comply with DOD 4145.26M" or incorporated ASPR 7-104.79(a) by reference. ASPR 7-104.79(a) mandated that a contractor "shall comply" with the DOD Safety Manual. King Depo. 73:7-75:5; 2/26/10 AM Tr. 717:13-719 (Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 33 of 57).* In addition, those contracts required all products being produced for and provided to the US Military would be produced in accordance with the appropriate Mil Specs, which would have specified the materials to be used, the procedures to be followed, and the precise sequence of steps required.



As noted by the US District Court of Central California: *From at least 1968 to 1986, the Defense Contractor's Administrative Services, known as the "DCAS," was the arm of the United States Government charged with ensuring that contractors complied with the DOD Safety Manual. 2/26/10 AM Tr. 719:22-720:3 (Tamada: ensuring compliance with the DOD Manual was one of DCAS' "primary responsibilities"); King Depo. 29:2-25, 43:3-46:5.192. DCAS maintained an office at the Site, and oversaw operations on every shift, including when Bermite employees were working overtime. Calkins Decl. ¶¶ 87-88. (Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 35 of 57). Once again, these requirements and the presence of inspectors from DCAS are consistent with all of the materials I have reviewed and knowledge gained from working at four major solid rocket production plants as well as multiple Government Owned, Contractor Operated (GOCO) Army ammunition production plants throughout the United States.*

Therefore, it is my opinion that the missiles and rockets produced at the Bermite facility were made pursuant to contract requirements mandating adherence to military specifications and the US Department of Defense DOD Contractors' Safety Manual for Ammunition, Explosives and Related Dangerous Materials dated October 1968 or their revisions released in 1986 and 1997, which would have constituted due care and the state of practice for those operations in those time frames.

### Opinion 3

As noted by the US District Court of Central California, *The United States Government required the destruction of waste explosives by specified means because such materials implicated national defense and the Government could not allow such materials to "fall into the wrong hands." 3/2/10 AM Tr. 916:17-23 (Wright: "you don't want those energetic items to fall into the wrong hands."). The disposal (by destruction) of excess N-29 propellant was required by the Government in order to "demilitarize" the propellant. 3/2/10 AM Tr. 921:18-922:23 (Wright). Section 1503 of the DOD Safety Manual authorized destruction by only four methods: dumping at sea, detonation, neutralization or burning. 3/2/10 AM Tr. 916:24-917:8 (Wright) and Tr. Ex. 61.0162. 187. From 1968 through 1986, Bermite's only viable option for complying with the DOD destruction requirement with respect to its excess or waste propellant was through burning because dumping at sea was no longer permitted (3/2/10 AM Tr. 917:20-918:2 (Wright)), neutralization was not effective (3/2/10 AM Tr. 920:4-921:20(Wright)), and detonation was not permitted in California (Tr. Ex. 185; King Depo. 73:4-6). With respect to the burning of waste, the 1968 DOD manual contained numerous provisions mandating how the contractor could conduct burnings (e.g., not in containers or on concrete, with fire equipment readily available), where the contractor could conduct burns (e.g., minimum distances from buildings, prevailing winds must blow sparks in specified direction) and when the burns could occur (non-windy days and not within 24 hours unless the burn area is soaked with water). The contractor did not have the discretion to deviate from these mandates. 3/2/10 AM Tr. 925:11-931:6 (Wright). Trial Ex. 61.0162-0167. (Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 34-35 of 57) As such, burial of propellants and other explosive and ignitable materials such as ammonium perchlorate was prohibited and compliance was monitored by the on-site DCAS inspectors.*

While there is clear evidence that contaminated waste materials had been dumped or buried on site over the history of operations at the Bermite facility, there is no evidence of direct burial of concentrated propellants, explosives, solvents or hazardous wastes as defined under the RCRA. In his expert report, David Bauer opines that perchlorates were buried at numerous locations around the

facility. He attempts to support that opinion by listing the areas where perchlorate was observed in site soils as follows (Bauer Expert Report 2010):

- Building 31 – 30 cubic yards of fill containing up to 810 mg/Kg soil (ppm)
- East Fork Landfill Area – 66,000 cubic yards containing up to 716 µg/kg soil (ppb)
- Hula Bowl I – fill present with up to 504 µg/kg soil (ppb)
- Hula Bowl IV - fill present with up to 1,970 µg/kg soil (ppb)
- OU5 Area 2 Landfill - fill present with up to 590 µg/kg soil (ppb)
- Burn Valley 101,000 cubic yards with up to 316 mg/kg soil (ppm)
- Soil beneath the 317 impoundment found to contain up to 171 mg/kg soil (ppm)

Two of these sites clearly have nothing to do with the burial of wastes: 1) The burn area and 2) The soil beneath the impoundment. Indeed, the burial ground was used to burn propellant waste in accordance with DOD requirements: *The grounds should be well packed earth and shall be free from large stones and deep cracks in which explosives might lodge. Explosive materials shall not be burned on detonated on concrete mats.* (US Department of Defense DOD Contractors' Safety Manual for Ammunition, Explosives and Related Dangerous Materials October 1968). Perchlorate residuals are common at burial sites because the prohibition of confining the propellants and the allowance for burning on bare ground often resulted in incomplete burns. Indeed, I have seen data from test firing stands indicating that even when propellants are burned in the rocket motor, combustion is incomplete and unreacted perchlorate is discharged. The resulting ash and unburned materials are subject to transport and dispersal by the advective currents created by the burning, the wind, and runoff after precipitation events.

The Area 317 impoundment was utilized for storing wastewater. As noted by the US District Court of Central California: *The 1968 DOD Safety Manual mandated that contractors use "sumps, settling bed or leaching pits" to avoid contamination to local streams.* Trial Ex. 61.0159. ((Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 35 of 57).

None of the seven sites listed contain more than 810 ppm. The propellant produced at the site contained 67.1 percent ammonium perchlorate, which equates to 56 percent perchlorate or 560,000 ppm. That concentration is over 690 times greater than the highest perchlorate concentration observed in any of the "burial" sites. Clearly, neither bulk propellant nor bulk ammonium perchlorate were buried on site.

That is not to say that materials and soil with perchlorate contamination were not left on site. As noted by AME, non hazardous solid wastes were disposed in landfills (Final Remedial Investigation Work Plan Whittaker Corporation Bermite AME August 29, 1995) including wastes from years before Whittaker purchased the property. Due to the lack of perchlorate in excess of one percent in those wastes, they would not have been considered explosive or reactive wastes. These data are consistent with the testimony of James Jisa who stated that perchlorate was never buried on site (Deposition transcript, page 53) and that nothing was transported to the Hula Bowl that was not inert (i.e., not energetic) (Deposition page 134). Similarly, Glen Abdun-Nur testified that a number of areas had been used to discard junk such as broken furniture and scrap, but to his knowledge drums of chemicals or propellant were not buried.

When AME was describing their findings from trenching work, they often recorded metal scrap and debris as indicators of waste disposal activities (Deposition, pages 31, 54 and 80). Solid waste disposed

in the ravines included wastes from times prior to Whittaker's purchase of the facility. While a few drums of materials were ultimately excavated, it is not clear when they were buried. One memo implies that solid wastes could have been deposited over a period of 40 years or more. (Abdun-Nur deposition, page 122 and Exhibit 56) Regardless, the intact drums excavated on site held solidified resin of an unknown composition, but no perchlorate.

When the Resource Conservation and Recovery Act regulations were promulgated in 1980, perchlorate was designated hazardous by virtue of being ignitable and reactive. The US Department of Defense was considered the authority on handling explosive and ignitable munitions and propellants. The working hypothesis for those materials was that their explosive/reactive properties were not present if they were less than one percent (10,000 ppm) of the sample being evaluated. Clearly, soil containing 810 ppm is more than an order of magnitude below that threshold. It should be noted that the so called "mixture rule" was formulated well into the 80s.

The toxic properties of perchlorate were not addressed in regulations until the 1990s, well after the Bermite facility was no longer operating. Health Risk Assessments performed by US EPA in 1992 and 1995 in support of CERCLA resulted in a determination that perchlorate could pose a noncarcinogenic risk to human health if ingested. (California Department of Public Health, History of Perchlorate in California Drinking Water, October 19, 2007 update) Perchlorate was added to the list of "unregulated chemicals for which monitoring is required" under the federal Safe Drinking Water Act in 1999 (California Department of Public Health, History of Perchlorate in California Drinking Water, October 19, 2007 update). California set an MCL for perchlorate in October 2007, (California Department of Public Health, History of Perchlorate in California Drinking Water, October 19, 2007 update).

When the National Priority List was first promulgated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the top priority site was the Aerojet solid rocket production site near Rancho Cordova, California. That site was found to have TCE contaminated groundwater and immediate action was required under federal and State oversight. The selected remedy was implemented in the late 1980s and was designed to extract contaminated groundwater from the facility boundary, remove the TCE and re-inject the water to help create a hydraulic barrier to assist in capture of the remaining plume. The treated water contained perchlorate well above current action levels. However, it was not until the 1990s that toxicological evidence suggested that very low concentrations could be harmful to human health. The available analytical methods were not capable of detecting perchlorate at those levels. When both the toxicological data and the analytical methods were developed, it was determined the re-injected water from the Aerojet site was contaminating the water supply of Rancho Cordova.

Given these facts and the nature of perchlorate residuals observed on site, it is my opinion that there is no indication that any significant quantities of perchlorate, chlorinated solvents, or associated hazardous waste as defined under RCRA were knowingly buried on site or in close proximity to the Bermite facility.

#### Opinion 4

The US District Court of Central California concluded that propellant losses included airborne dust from operations and spillage. The grinders created perchlorate dust, which was collected in either the bag house or fell to the floor. Approximately 150 pounds of ammonium perchlorate dust was collected in each bag house every week. The remaining perchlorate dust on the walls and floors was washed out from the grinding buildings to the bare ground. Every week, approximately 30 gallons of water mixed with ammonium perchlorate was washed out of Building 308, while one drum of ammonium perchlorate dust (150 lbs) was collected each week per grinding unit. (Trial Ex. 281) Perchlorate grinding occurred in Buildings 308, 313, and 314. The 1968 DOD Safety Manual provided that contractors working with water soluble explosives should sweep their floors and then wash them down with a “sufficient volume [of water] to assure complete dissolution of the material.” Trial Ex. 61.0159-61.0160. (Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 35 of 57)

These findings are consistent with my own forensic work at solid rocket facilities wherein I found that dust from grinding operations accounts for significant losses of perchlorate on the order of 1 to 3 percent of all perchlorate handled on site. The vast majority of those losses is attributed to the state of the art of bag house technology at the time. (1953 Chemical Engineer’s Handbook, McGraw-Hill 3<sup>rd</sup> Ed) as well as studies summarized in Table 1.

Table 1. Percentage Loss of Industrial Operations in 1968 to 1972 Timeframe (Source: Public Health Service AP-42 and subsequent Environmental Protection Agency Supplements and new editions)

| Operation                                      | Percent Losses | Percent < 44 Microns |
|--|----------------|----------------------|
| Solids Handling – Transfer, Conveying, Storage |                |                      |
| Sand Storage                                   | 1              |                      |
| Soda Ash Handling                              | 0.3            |                      |
| Terminal Grain Elevator                        | 0.7            |                      |
| Country Grain Elevator                         | 1.2            |                      |
| Brick Production                               | 1.7            |                      |
|  |                |                      |
| Grinding                                       |                |                      |
| Alfalfa Dehydration                            | 3              | 100                  |
| Lime crushing                                  | 1.6            | 72                   |
| Fluorspar                                      | 1              |                      |
| Gravel Crushing                                | 1              |                      |

|                              |     |     |
|------------------------------|-----|-----|
| Lead Ore Crushing            | 2.5 |     |
| Brick Production             | 3.8 |     |
| Castable Refractory Crushing | 6   | 100 |
| Cement Drying and Grinding   | 0.9 | 92  |
| Ceramic Clay Grinding        | 3.8 | 95  |
| Gypsum Grinding              | 1   | 95  |
| Phosphate Rock Grinding      | 1   | 100 |
|                              |     |     |
| Baghouse                     |     |     |
| AP-42 1968 High              | 20  |     |
| AP-42 1968 Ave               | 5.8 |     |
| AP-42 1968 Low               | 0.1 |     |
| AP-42 1971 High              | 10  |     |
| AP-42 1971 Ave               | 3.2 |     |
| AP-42 1971 Low               | 0.1 |     |

In addition, hog-out operations contributed significantly to perchlorate losses. Once mechanical means of removing expired propellant from rocket motors were replaced by hydraulic means, large streams of water were produced after having been in contact with the propellant in the rocket motors. Perchlorate is readily dissolved from the exposed surfaces of the cast propellant and carried off by the waste stream. That water was subsequently routed to the impoundment near Building 317 from which there are recorded incidents of overflow and leakage through the liner. In addition, the pond was not lined prior to 1980. The large area of contaminated soil beneath the impoundment is consistent with losses of perchlorate containing waters from the impoundment. (Zoch, page 18-19; Peach Deposition) I have investigated sites at solid rocket production facilities that conducted similar hog out operations and these data are consistent with what I observed.

In addition, JATO rockets were machined with a water spray for ignition repression and waste carried with the water discharged into a pond (Zoch p.15) which would have included perchlorate dissolved from the propellant. Perchlorate contamination has also been observed in the area where the mandatory test firing of 950 rockets took place. (McLane August 2009 Report and Findings of Fact and Conclusions of Law, Case No. : CV 09-01734 AHM (RZx) page 29 of 57) In my experience, there is a small but measurable release of unburned perchlorate when rockets are fired.

The loss of dust from grinding and bag house facilities both in atmospheric and washdown releases would have resulted in perchlorate contamination of surface soils in the surrounding areas which would then be subject to further dispersal around the facility.

Given the operational history of the site and the results of investigations performed in the 1980s, 1990s and 2000s, it is my opinion that the most likely sources of significant perchlorate losses at the Bermite facility were: 1) Atmospheric dusts and washdown water from the operation of grinding operation bag houses; and 2) Waste water from hog out operations and JATO production.

#### Opinion 5

The site investigation results have clearly demonstrated that the vast majority of chlorinated solvent residues found at the facility were located in the subsurface beneath Building 317 and the surrounding areas from which accumulated TCE removed by a soil vapor extraction (SVE) system as of January 1993 totaled ~30,000 lbs (SCVWAVWHIT2019-028939). At Building 300, motor tubes were sand blasted and degreased with solvents including PCE and 1, 1, 1-TCA. Available documentation does not record specific releases and does not report any removal activities. (Remedial Investigation Report) The motor production work would have required the use of a vapor degreaser for preparing the rocket motors prior to casting the propellant. The motor casings would have been sandblasted to clear away imperfections and impurities. The motor would then be cleaned in the vapor degreaser. With the motor casings being roughly four feet long, they would have required a degreaser with a surface area in excess of 600 square inches. Any vapor degreaser with a surface area of 600 square inches or greater, would have included a water separator unit (ASTM 1962 and 1976 "Handbook of Vapor Degreasing", Dow and Diamond Shamrock manuals).

The water separator unit was a gravity separation device designed to capture and separate solvent and water. Solvent was expensive and was captured for return to the solvent reservoir for continued use. Water was removed because excess water accelerated corrosion within the degreaser, leading to costly repair or replacement. Vapor degreasers were typically heated with steam and cooled with cooling water. As such there was ample humidity in an around the vapor degreaser. Water vapor would condense around the cooling coils and was captured in the collection troughs along with condensed solvent. The combined fluids flowed to the separation unit where it would be held as gravity caused the two fluids to separate with water floating above the heavier chlorinated solvent. The lighter water automatically overflowed into a drain while the solvent was routed back into the solvent reservoir.

Most vapor degreasers were installed by the manufacturer and the water discharge units were typically plumbed to a dry well or French drain beneath the ground surface. The water so discharged would be nearly saturated with solvent. As such, it could contain as much as 1,000 mg/L of TCE. Such a discharge arrangement is likely to have been installed at the Bermite site because there were limited sewer lines and they did not serve any production facilities. (Abdun-Nur deposition page 87-88) In a typical degreaser unit, discharging 1-2 gallons per day of separated water would amount to the release of 1.5 to 3 lbs/hr (EPA. 1977. "Control of Volatile Organic Emissions from Solvent Metal Degreasing" EPA-450/2-

77-022, p.5-4). It follows that the 41,000 lbs of chlorinated solvents removed in the vicinity of Building 317 as of June 1995 (W-BRMT 127751) would be consistent with 13,000 – 26,000 hours of operation, or 6- 12 years of production assuming 50 weeks/year of 40 hours/week operations. Sidewinder and Chaparral missile production began in 1966 and had accounted for over 20,000 motors by 1981, a period of 15 years (Zoch 2009, page 14).

While TCE was also present in waters discharged to the Building 317 impoundment, that source and pathway would not have contributed nearly as much solvent to the environmental inventory as the vapor degreaser at that site because the impoundment was operated as an evaporation unit and spray nozzles were added to increase evaporative losses. Chlorinated solvents being much more volatile than water, the solvents would have been preferentially reduced from the water. The degreaser separator water was typically discharged beneath the ground surface and as such, protected from large evaporative losses. Indeed, the water within which the solvent was dissolved would likely have contributed to perched water found beneath the site.

Other, much smaller sources of solvents included sumps such as that at the Area 75 machine shop. When leaks developed in these features, they would introduce solvent directly into the subsurface and thereby minimize evaporative losses.

Given the amounts of solvent found in the area around Building 317 and the concentrations observed and the use of bulk solvents for degreasing, this site would meet two of the three EPA criteria (ground water containing in excess of one percent of the solvents saturated solubility in water and use of large volumes of solvent) for the likelihood of encountering dense non aqueous phase liquids (DNAPL) in the soil and/or groundwater. However, I have seen no indication that DNAPL has been observed anywhere on site. I have seen the same set of circumstances at other sites where vapor degreasers were operated. With the design of the water separation unit, the DNAPL resides in the water separator itself and is contained there while the water is discharged as a highly concentrated effluent. There are no forces of nature that can then reconstitute the pure solvent. As such, concentrations of chlorinated solvents at those sites exceed the one percent rule, but no DNAPL is present and that is indicative that the primary source of losses was the water separator unit.

I have conducted forensic analyses of vapor degreasing operations at three solid rocket facilities as well as other industrial operations and in each case the vapor degreasing losses were consistent with this analysis. As a consequence, it is my opinion that the most significant source of chlorinated solvent losses at the Bermite facility was effluent from the water separator unit on vapor degreasers used in the production of missile motors, while smaller contributions were made from solvent bearing wash waters and leaking sumps.

Of further note is that a different kind of degreaser, a barrel degreaser was used at the Whittaker facility in Hollister, California that was operated in the 1980s. That design is more of a dip tank than a vapor degreaser and as such does not require a water separator. Accordingly, the chlorinated solvent residues at that site are markedly smaller than those at the rocket motor production area of the Bermite site, but consistent with the smaller releases near the Bermite machine shops. (McClane, 2015).

**EXHIBIT F**



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## **REBUTTAL EXPERT REPORT OF PHYLLIS S. STANIN**

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**SANTA CLARITA VALLEY WATER AGENCY,  
PLAINTIFF, VS. WHITTAKER CORPORATION  
AND DOES 1-10, INCLUSIVE; DEFENDANTS**

**UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA**

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**September 4, 2020**

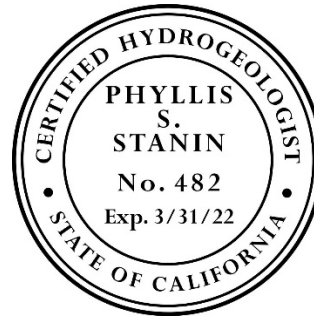
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## SIGNATURE PAGE

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*Phyllis S. Stanin*

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Phyllis S. Stanin, Vice President/Principal Geologist

Todd Groundwater

vertical migration from S-IIIa to S-IIIc. This deepening of the contaminants can also occur in the vicinity of pumping wells. As TCE migrates both laterally and downward in the HSUs, the increasing concentrations in deeper HSUs is expected. Accordingly, these downgradient concentrations do not “support the presence of other potential unidentified sources in the vicinity of Water Agency groundwater production wells V-201 and V-205” as asserted by Hokkanen (p. 53).

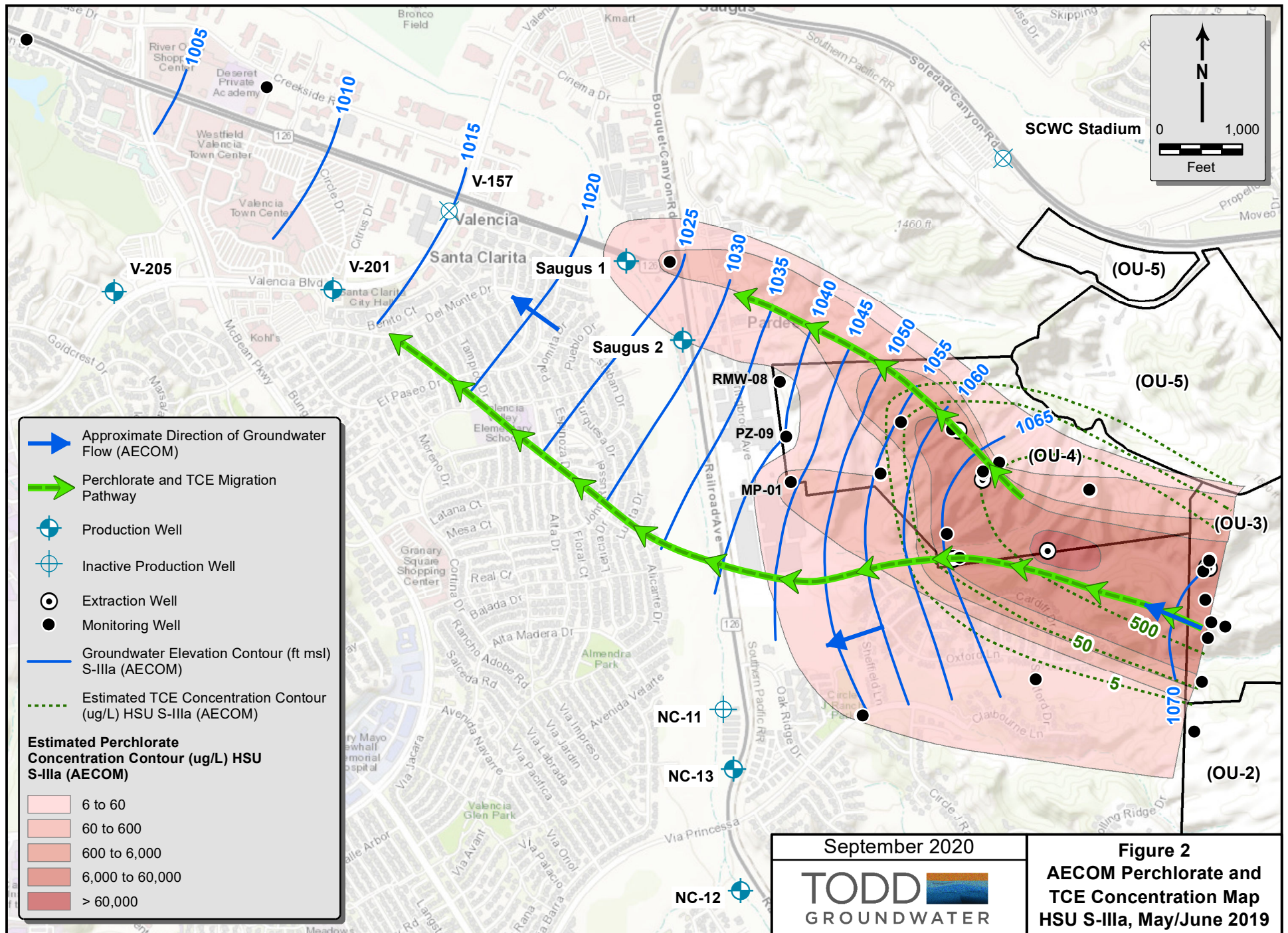
### 3.2.2. Capture Zone Analysis of V-201

Hokkanen also uses a capture zone analysis to support Opinion 5. He illustrates this support with a CH2M Hill capture zone map that was prepared for a 2004 containment analysis. He notes that the capture zone for V-201 “does not include or encompass the Bermite Site” (p. 54). First, this opinion appears to question whether migration from the Site could reach V-201; however, the hydraulic connection and a completed groundwater migration pathway from the Site to V-201 has already been demonstrated by the detections of perchlorate in V-201 – something that no expert in this case is questioning.

Second, the capture zone analysis was conducted with an older model for the purposes of containment within the overall Saugus Formation and does not have sufficient resolution for contaminant transport in the individual HSUs. This older model has now been replaced with more accurate information collected since that model was developed. However, even with this bulk model, there is nothing in the analysis that suggests that VOCs could not reach V-201. As indicated on Hokkanen Figure 30, the capture zones for Saugus 1 and Saugus 2 are capturing flow from the Whittaker Site prior to arrival of groundwater at V-201. However, when these wells are shut down, contaminants continue to migrate past these wells toward V-201 and V-205. Even the bulk model would have an expanded capture zone for V-201 if Saugus 1 and 2 were not pumping.

More recent updated capture zones have been analyzed using the Whittaker updated groundwater flow model. While this model also has limitations, the capture zones developed by AECOM contain model layers consistent with the current interpretations of HSUs, allowing more precise discretization of the complex stratigraphy. Various capture zone analyses have been conducted by AECOM, but those that include pumping in V-201 indicate capture of groundwater beneath the Whittaker Site.

For example, **Figure 3** shows a capture zone analysis for S-IIIa as developed by AECOM (and provided to the water agency as part of this litigation). As shown, the example V-201 capture zone covers much of the southern Whittaker Site. Capture zones from the Saugus 1 and Saugus 2 wells, which are also pumping in this scenario, capture groundwater flow from beneath much of the Whittaker Site. Other model results produce variable orientations of flowlines depending on pumping locations and rates, boundary conditions, and other factors. Nonetheless, model results indicate that upgradient flowlines associated with V-201 pumping extend to the east-southeast beneath the Whittaker Site. This analysis is contrary to the evidence used by Hokkanen to conclude that VOCs have not migrated from the Whittaker Site to water supply wells V-201 and V-205.



## **EXHIBIT G**



**UNITED STATES DISTRICT COURT  
FOR THE CENTRAL DISTRICT OF  
CALIFORNIA**

Santa Clarita Valley Water Agency,

Plaintiff

-vs-

Whittaker, et al.

Defendants

Case No. 1:19-CV-00010

**EXPERT REBUTTAL REPORT OF  
RICHARD J. HUGHTO, Ph.D., P.E.**

**PREPARED FOR  
SANTA CLARITA VALLEY WATER AGENCY**



Richard J. Hughto, Ph.D., P.E.

September 4, 2020

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## **FIGURES**

1. TCE Concentrations in Soil
2. Site Locations Associated with TCE and PCE Use
3. Soil Investigation Results Burn Valley Area
4. VOC Impacted Areas Identified by Whittaker
5. Waste Disposal Areas
6. VOC and Perchlorate Impacted Areas Identified by Whittaker

## **1.0 INTRODUCTION**

I prepared an Expert Report in this matter dated August 3, 2020. This Rebuttal Report is made in rebuttal to the August 1, 2020 Expert Report prepared by Mr. Gaynor Dawson. I provided a list of other cases in which, during the previous four years, I have testified as an expert at trial or by deposition as part of my August 3, 2020 Expert Report. The only testimony I have provided since the date of that report is a deposition on August 21, 2020 in *Wolverine World Wide, Inc. v. The American Insurance Company, et al.* In addition to those documents identified in my August 3, 2020 Expert Report, I have considered the materials identified as referenced herein.

The opinions I express herein supplement and do not change the opinions I set forth in my August 3, 2020 Expert Report. My opinions are to a reasonable degree of scientific certainty. I reserve the right to modify my opinions and conclusions, including those set forth in my August 3, 2020 Expert Report, based upon my review of additional information and/or relevant materials. Further, I reserve the right to modify, change or add to my opinions or conclusions, and to offer additional opinions as further information becomes available.

## **2.0 GAYNOR DAWSON REPORT**

Mr. Dawson prepared a report with respect to the operations and potential releases of chemicals resulting in contamination on Whittaker Corporation's former Bermite facility in Santa Clarita, California (the Site). He provides a set of general and largely qualitative opinions without a statement of purpose. The work also lacks a scientific approach for most of the opinions with the bases being largely assumptions by Mr. Dawson, as opposed to an analysis of data in a scientific evaluation of his hypotheses.

Mr. Dawson's stated opinions and my rebuttal to each are presented below.

### **2.1 DAWSON OPINION 1**

*Opinion 1: The overwhelming majority of releases of perchlorate and chlorinated solvents at the Bermite site were associated with the production of Sidewinder and Chaparral missiles, and to a lesser extent, JATO rockets.*

In order to render this opinion based on a scientific analysis, it would be necessary to present where the releases took place, determine that there actually was an overwhelming majority from the cited operations, and back that up with comparison to the soil and groundwater data for the Site showing that there is an overwhelming correlation between the locations and timing of those operations and contamination in the soil. Mr. Dawson does not provide the results of such an analysis. There is no quantitative support for his opinion of the "*overwhelming majority of releases*".



Mr. Dawson relies on the Declaration of Dr. Jay Brigham, who concluded that there was no evidence of perchloroethene (PCE) or trichloroethene (TCE) use at the Site during World War II. However, Mr. Robert Zoch, whom Mr. Dawson relied on for some information, opined in his Expert Report (6/8/09) that TCE was likely used at the facility during World War II, because it was specified by and sometimes supplied by the Department of Defense (DOD) for degreasing of metal parts. Mr. Zoch's opinion is consistent with my experience at many facilities that performed DOD contracting during that period. DOD specified TCE as the degreaser for its manufacturing.

The site data show that there are many more areas of release than Mr. Dawson assumes. These are widespread. Figure 1 shows the locations of elevated concentrations of TCE in soil. Figure 2 shows the locations at the Site associated with TCE use. Figure 1 shows release locations, and all are not associated with production of Sidewinder and Chaparral missiles and JATO rockets. In fact, the highest concentrations of TCE, and other chlorinated solvents, observed at the Site were in the Burn Valley Area, which was not the location of the missile and rocket production (Figures 1 and 3). Figure 4 shows the widespread nature of VOC-impacted areas.

The relative amounts of solvent used in different operations are not necessarily correlated with the amounts released from the different operations. Some operations that used less solvent could have resulted in relatively significant releases. It is for that reason that a thorough scientific analysis is appropriate when ranking the relative quantities of solvent releases.

## **2.2 DAWSON OPINION 2**

*Opinion 2: I have seen no clear evidence that the missiles and rockets produced at the Bermite facility were not made in accordance with contract requirements mandating adherence to military specifications and the US Department of Defense DOD Contractors' Manual for Ammunition, Explosives and Related Dangerous Materials dated October 1968 or their revisions released in 1986 and 1997, which would have constituted due care and the state of practice for those operations in those time frames.*

The 1986 Manual was at the end of Whittaker's production period at the Site, and the 1997 Manual was long after manufacturing ceased at the Site. As a result, the 1968 Manual was the one that applied to the production processes at the facility that Mr. Dawson referenced.

Mr. Dawson opined that he saw no evidence of production that was not in accordance with the DOD Manuals. However, he provides no evidence or reference to materials that demonstrate that production complied with the provisions of the Manuals. He cites to the existence of the Manuals and of DOD personnel at the facility as bases for his opinion. Mr. Dawson does not identify which production processes he is referring to or what means he went to in studying the compliance with the Manual requirements. He does not identify the time period for which he is rendering the opinion. Mr. Dawson does not cite to any production logs or documentation, inspection logs or documentation, notes from Whittaker or DOD personnel related to production, waste handling logs or documentation, interviews or debriefings with personnel, or other

documentation that may have provided documentation related to the compliance with the Manuals. Documentation, not assumptions, is required to draw a scientific conclusion.

Mr. Dawson does not cite to the widespread indiscriminate waste dumping at the Site or the dozens of locations of sources of soil and groundwater contamination that actually existed at the Site as part of his analysis. Those waste disposal practices were not allowed per the 10/1968 Manual. In his report there is no mention of the government citations and correspondence regarding failure to comply with regulations regarding waste handling, which was documentation of not following the requirements in the Manual. He avoids mention of waste handling and disposal aspects of the Manuals. Rather, he makes vague references to his experience at other locations without an explanation of how that experience is pertinent to the Whittaker Site or to the opinion he rendered. The presence of DOD personnel on the Site does not mean that there was no waste dumping or releases of contaminants to the environment. The DOD Manuals state that methods of compliance with the DOD requirements were the responsibility of the contractor, Whittaker in this case.

Mr. Max Calkins was a Whittaker employee involved in the manufacturing at the Site for nearly three decades. In his 2/8/10 Declaration Mr. Calkins described the types of manufacturing on the Site and the involvement of the United States government, Whittaker's primary client. He described the government provision of manufacturing equipment and specifications for the operations. He described the government's activities in contract compliance, Quality Assurance of manufacturing, and contract specification compliance. These are all manufacturing-related activities. Mr. Calkins did not discuss waste disposal and handling, which resulted in the Site contamination, with the exception that the government provided directions related to hog-out operations.

Dr. Jay Brigham prepared an Expert Report (8/24/09) in litigation related to the Site. Dr. Brigham, who was referenced by Mr. Dawson in his report, cited to the DOD presence on the Site as a Quality Control role in the product manufacturing, not in waste management. Dr. Brigham also related that Whittaker performed manufacturing at the Site for clients other than the DOD. The DOD Manuals would not have applied to that work.

Dawson's loose approach of relying on whether he saw evidence that Whittaker did not comply with as-yet unidentified terms of agreements over some unidentified period of time is unscientific and unreliable for many reasons. He did not provide documentation of the production processes and a means of measuring compliance. He does not discuss evidence of ongoing poor waste management and disposal practices with respect to the storage and disposal of hazardous substances, nor the evidence of "indiscriminate dumping" and many citations from regulators regarding Whittaker's inability to provide essential records as to its operations and environmental compliance. Those types of records would be important in a scientific analysis of the issue Mr. Dawson opined on. Mr. Dawson's analysis is a series of assumptions based on a portion of the records available. It was not a scientific analysis of the issue or of a more complete set of records.

### 2.3 DAWSON OPINION 3

*Opinion 3: There is no indication that any significant quantities of perchlorate or chlorinated solvents were intentionally buried on site or in proximity to the Bermite facility.*

Mr. Dawson is not opining that there was no burial of waste material. The opinion and related discussion of bases do not define the standards he applied to rendering this opinion. He restricts his opinion to certain types of waste. Mr. Dawson uses the term “no indication”, but neglects the evidence of waste disposal, including Whittaker’s own description of it as indiscriminate, and the multitude of contaminant sources that resulted from the handling of waste materials. An 8/26/82 Whittaker Memo referenced the illegal dumping and need to remove drums from the Hula Bowl waste disposal and burial area, which Whittaker referred to as “a disaster area”. Perchlorate and chlorinated solvents were subsequently discovered in the Hula Bowl Area.

Mr. Dawson opined that the contractor, Whittaker, did not have the discretion to deviate from waste handling requirements that restricted options to burning of explosives wastes during much of the period of production. He states:

*As such, burial of propellants and other explosive and ignitable materials such as ammonium perchlorate was prohibited and compliance was monitored by the on-site DCAS inspectors.*

This is an assumption, not a conclusion of a scientific analysis. No records related to waste handling or management are referenced. It is merely an assumption that certain practices were conducted as documented in Manuals because the Manuals existed. As discussed above, the fact that the Manual and the regulatory requirements restricted waste disposal options does not mean that the requirements were always followed. The presence of widespread indiscriminate waste disposal and the soil and groundwater contamination across the Site are evidence that the procedures in the Manual were not followed. The presence of government inspectors, as discussed above, were primarily for Quality Control in the manufacturing process, not for the waste disposal process.

Wenck Associates (6/22/87) reported on the presence of numerous waste disposal and burial locations on the Site. Figure 5 depicts some of those locations. The Anden Group (11/3/92) reported to DTSC that it had discovered buried drums and waste material. IT Corporation exhumed buried drums at the Site (DTSC Memo, 11/29/95). Mr. Glen Abdun-Nur, a Whittaker employee for decades, testified (3/25/02 deposition) about the excavation of about 150 drums in a hazardous waste excavation and additional intact drums from a landfill at the base of a water tank. Mr. Norman Wenck, a Whittaker environmental consultant, testified at his 10/27/06 deposition that they found lots of intact drums when excavating on the Site. It was Wenck Associates that was investigating the numerous waste burial areas on the Site. Mr. Robert Zoch prepared an Expert Report (6/8/09) in litigation related to the Site and reported that waste solvents containing perchlorate were drummed at the Site.

Large volumes of waste material were disposed on the land surface and buried throughout the Site. Whittaker decided to only remove the large material (Thompson Memo, 6/22/87), which left the remaining waste material in place. Wenck (6/22/87) reported on landfills in valleys and embankments, some of which were covered, which is burial. The landfills were reported to contain metal scrap, liquid waste, and solid hazardous waste. Wenck Associates (4/1988) reported on the excavation and removal of buried landfill materials. Mr. Abdun-Nur testified (3/25/02) about highly explosive material being disposed on the south edge of the East Fork landfill. Mr. James Jisa, a Whittaker employee, testified at his 4/9/02 deposition that he was aware of waste burial at the plant. GSI Environmental (4/15/2020) reported on the completion earlier in 2020 of excavation of several landfill areas. Landfill disposal is intentional. At the Whittaker Site waste material was placed in valleys and embankments, and in some cases was covered. In a 4/14/86 Environmental Audit Whittaker identified 19 suspected areas of buried or subsurface material, including wastes and ordnance.

Mr. Dawson compared certain soil concentrations of perchlorate measured in soil at the Site with concentrations of the raw perchlorate purchased and used in manufacturing to conclude that perchlorate was not buried. His comparison does not prove that bulk propellant, bulk ammonium perchlorate, or waste material containing perchlorate were not buried. Data from the Site and other sites show that perchlorate will dissolve and migrate through the soil and to and with the groundwater. There is nothing to demonstrate that the observed soil concentrations used for comparison were the highest and most appropriate to draw conclusions related to the disposal of bulk products; regardless, the presence of perchlorate in landfill and waste disposal areas soil and groundwater demonstrates that perchlorate-containing material was disposed resulting in the observed contamination.

Mr. Dawson referenced some intact drums “*held solidified resin of an unknown composition, but no perchlorate*”. If the composition was unknown, how does he opine no perchlorate was present? This was still buried waste. It is not scientifically valid to conclude what something is not perchlorate, if you do not know what it is.

Mr. Dawson’s paragraph about the timing of regulations related to perchlorate in water has nothing to do with his opinion that there was no indication of significant quantities buried.

Mr. Dawson’s paragraph about Aerojet site remediation also has nothing to do with the opinion on quantities buried.

Mr. Dawson renders an opinion on a narrow topic that ignores Whittaker’s history of intentional and indiscriminate dumping of wastes on the Site, as well as practices that resulted in widespread contamination of the Site soil and groundwater with perchlorate and chlorinated solvents. Whittaker was not vigilant about waste management prior to the implementation of RCRA. Mr. Archie Simmons, a Whittaker employee beginning in 1972, testified at his 3/11/02 deposition about the state of environmental actions at Whittaker when he joined:

*Q. Did anybody brief you on environmental practices?*

*A. No. Hell, we couldn't spell the word environmental in 1972, hardly. Nobody—RCRA brought all of the attention to the environment, other than common sense, you know.*

Whittaker's Loss Control and Safety Department published a 5/29/79 memo documenting numerous waste handling and disposal issues that included dumping. A 9/30/80 Bermite Memo identified practices that did not meet RCRA requirements and resulted in Site contamination. A 10/9/80 Bermite Memo listed RCRA violations including dumping waste materials on the ground. Bermite's 10/15/80 Memo cited serious problems with Bermite management and RCRA violations related to washing waste propellant down a hill and other practices. A 3/12/82 Bermite Memo identifies dumping of boiler wastewater on the ground as a violation of multiple regulations. A 4/12/82 Whittaker Memo reports the decision to cease dumping in Hula Bowl Area. The Hula Bowl waste disposal operation is called a "*disaster area*" in an 8/26/82 Whittaker Memo. Bermite's 9/7/82 Memo catalogs a number of incidences of "*terrible housekeeping*" related to waste management. A 9/9/82 Bermite Memo catalogs additional waste housekeeping issues. Wenck Associates (6/19/87) summarized actions at the Hula Bowl, including to leave waste material buried. Wenck Associates (7/24/87) reports on an investigation of buried material and the removal of material suspected of being hazardous. There is clear documentation, despite Whittaker's history of poor record keeping, of serious waste management and disposal issues at the Site that Whittaker employees documented, including intentional burial.

In his report Mr. Dawson develops his opinion based on an incomplete set of information. He ignores the voluminous documentation of intentional dumping, production practices that resulted in Site contamination, regulatory violations, and Site employee documentation of the waste handling issues. His analysis is not scientific, as it ignores this readily available and very pertinent information. Contrary to there being "*no indication*" of burial, there is considerable and compelling evidence that Whittaker practiced indiscriminate dumping and disposal of contaminated materials and chemicals were released into the environment from numerous source locations. Figure 6 shows VOC and perchlorate-impacted areas. Whittaker recklessly burned waste, including igniting a brush fire that led to revocation of its burn permit, as well as to the highest concentrations of contaminants measured at the Site. I addressed some of this conduct and the regulatory implications in my original Expert Report in this matter, and I adopt and incorporate those comments and evidence herein.

## **2.4 DAWSON OPINION 4**

*Opinion 4: The most likely sources of significant perchlorate losses at the Bermite facility were: 1) Atmospheric dusts and washdown water from the operation of grinding operation bag houses; and 2) Waste water from hog out operations and JATO production.*

Mr. Dawson reaches this opinion without citing any quantitative data or information from the Site. He lists data from different types of manufacturing facilities, but not from the Site. No scientific analysis is presented to demonstrate that those are the most likely significant sources. Referring to these as "the most likely sources" does not rule out other significant and less

significant sources that resulted in contamination of the Site and vicinity soil and groundwater. A thorough scientific analysis would have presented a more comprehensive list of sources.

The mechanisms cited by Mr. Dawson likely did occur. These were not accidental mechanisms of Site contamination; they were intentional and routine operations that served as sources of contamination of the soil and groundwater at the Site.

Figure 6 shows the locations where perchlorate impacts have been detected. There are more areas than those referenced by Mr. Dawson. Some of these areas were not the locations of the operations cited by Mr. Dawson.

The sources of perchlorate impact are much broader than indicated by this Dawson opinion.

## **2.5 DAWSON OPINION 5**

*Opinion 5: The most significant source of chlorinated solvent losses at the Bermite facility was effluent from the water separator unit on vapor degreasers used in the production of missile motors, while smaller contributions were made from solvent bearing wash waters.*

Such an opinion can only have been validly made as the conclusion from a scientific analysis that evaluated:

- the locations of solvent losses to determine where the most significant were,
- identification of the sources of losses in those areas with the specificity of where in the facility equipment the releases took place,
- conclusions on the causes of the most significant losses, and
- comparisons with other losses to demonstrate which were the most significant.

No scientific analysis is presented to even narrow down the locations of impacts for which sources could then be evaluated. The soil data for the site indicate that other locations, like the Burn Area, were subject to significant losses to the environment, see Figure 3. The data for the Burn Valley Area in Figure 3 show TCE at 4.1%, PCE at 2.5%, and TCA (1,1,1 trichloroethane) at 0.8% for a total of 7.4%, which is an extremely high concentration, much higher than any other location reported for the Site. There were no degreasers in the Burn Valley Area, which eliminates those as a source of that contamination. VOCs were detected in soils in 41 different areas of the Site (Acton Mickelson Environmental, 1/1997). With 41 different locations, a scientific analysis to determine which sources were most significant would be warranted to draw opinions on which were most significant.

Mr. Dawson's fifth opinion is about a single most significant source. That is not important to the overall analysis of the solvent contamination at the Site and the downgradient vicinity, as there are multiple other sources that contributed to the contamination that contributed to the Site groundwater contamination.



The stated opinion is about the “*most significant source*”, while Mr. Dawson’s basis for that opinion begins with a statement about the “*vast majority*”; these are very different. As discussed above an analysis of the data shows that the vast majority of solvent mass in the environment has not been shown to be from locations where degreasers were operated, as the highest concentrations are from an area where degreasers were not utilized and no analysis of mass is presented. In addition, the sources and the identified areas of impact are widespread, some of which are likely related to Whittaker’s indiscriminate dumping of wastes at the Site.

Mr. Dawson begins his basis for Opinion 5 with a correlation of a SVE remediation system in the vicinity of Building 317 to the location of the vast majority of residues. The solvent concentrations reported in that area were not as high as those in the Burn Valley Area. In addition, multiple SVE systems were constructed and operated on the Site, and each of those was in an area where there were significant solvent releases. This is another indication of the potential impact of the indiscriminate waste dumping at the Site.

I have dealt with many sites over the past 40 years with contamination from vapor degreaser operations. The release mechanism Mr. Dawson describes in his Opinion 5 is not the only solvent release mechanism in such operations. Significant releases can also occur from the escape of the vaporized solvent, releases from pipes of solvent and recovered solvent, wash-over from the degreaser unit, and other solvent handling. Mr. Dawson assumes the water separator was the most significant source without providing any data or observations to substantiate such an opinion or to rule out other potential sources. He does not even cite to the location of a single degreaser for which his hypothesized release mechanism existed, and he assumes that the release mechanisms from all degreasers are the same. In addition, he does not cite to any observations of water separator releases from a degreaser at the Site. Later in his basis documentation, Mr. Dawson states that vapor degreasing releases at other facilities were consistent with his hypothesized release mechanism. He does not demonstrate that the release mechanism even occurred at the other facilities. However, he uses that conclusion to opine:

*As a consequence, it is my opinion that the most significant source of chlorinated solvent losses at the Bermite facility was effluent from the water separator unit on vapor degreasers*

This opinion is not scientifically determined. He cites to no physical or visual evidence of such a release occurred at the locations he uses as a basis or at the Whittaker facility.

In his basis for Opinion 5, Mr. Dawson relies on forensic analyses he performed at other locations without explaining: (1) what the analyses were, (2) what the results were, (3) how they relate to the Whittaker Site conditions, or (4) why no such analysis was performed for the Whittaker Site. He presents no basis to assume his other analyses are relevant to this Site. This is not a valid scientific analysis of the Site conditions or the nature of the sources he opines about.

In his basis for Opinion 5, Mr. Dawson states

*“the water within the solvent that was dissolved would likely have contributed to perched water found beneath the site”.*

Mr. Dawson makes this statement without identifying where the referenced releases took place or whether perched water exists in those areas. If he is to draw such a conclusion scientifically, he needs to answer questions about where those releases took place, the magnitude of the water in the releases, the existence of perched water impacted by the releases, changes in the perched water elevation and/or quality, and causes of the presence of perched water in other areas not impacted by his hypothesized releases.

Mr. Dawson opines that the lack of DNAPL is indicative that the primary source was the water separators in the degreasers. I do not agree. For releases from degreasers, the natural environment characteristics, the pace of release, the amount released, the location of release, and the location of observation of soil and groundwater conditions have a great deal to do with whether DNAPL would be present and whether DNAPL was detected. Lack of detection does not mean lack of presence necessarily. This conclusion also fails the scientific test, as he does not use observed data and demonstration of releases from the degreasers to support his opinion. He uses a lack of observation of DNAPL to conclude that something occurred and that it is the primary or most significant source; no scientific analysis was performed.

## **2.6 SUMMARY OF DAWSON OPINIONS**

Mr. Dawson presents a series of qualitative opinions that are largely assumptions that are not the result of a rigorous scientific analysis. He did not follow proper and established scientific procedures in developing and formulating his opinions. They are a group of assumptions not based on the Site data, testimony, or observations. Those opinions are not consistent with the relevant data and information developed for the Site. The use of Mr. Dawson’s opinions as a basis for broader opinions on the timing of releases of perchlorate and solvents or on the migration timing or characteristics is not scientifically valid.

Mr. Dawson should have had total access to the types of records that would have allowed a thorough and detailed analysis of his hypotheses. However, it appears, based on his report, that he did not avail himself of such information, including:

- Purchase records for perchlorate and chlorinated solvents
- Records of the uses of site buildings
- Equipment records demonstrating the relevant types of equipment used at the facility over time
- Records specifying how chemicals were used in equipment and operations and residuals and waste products that resulted
- Specifications for chemicals used and methods of manufacturing of all of the products manufactured over time
- Cradle to grave handling of chemicals, manufactured products, residuals from manufacturing, and wastes over time



- DOD inspection records and documentation of waste handling and disposal

Such information, which would have been accumulated by his client over the years of operations would have contained much of the information necessary for scientific evaluations that could have served as bases for his opinions.

### ***3.0 MATERIAL REVIEWED AND RELIED UPON***

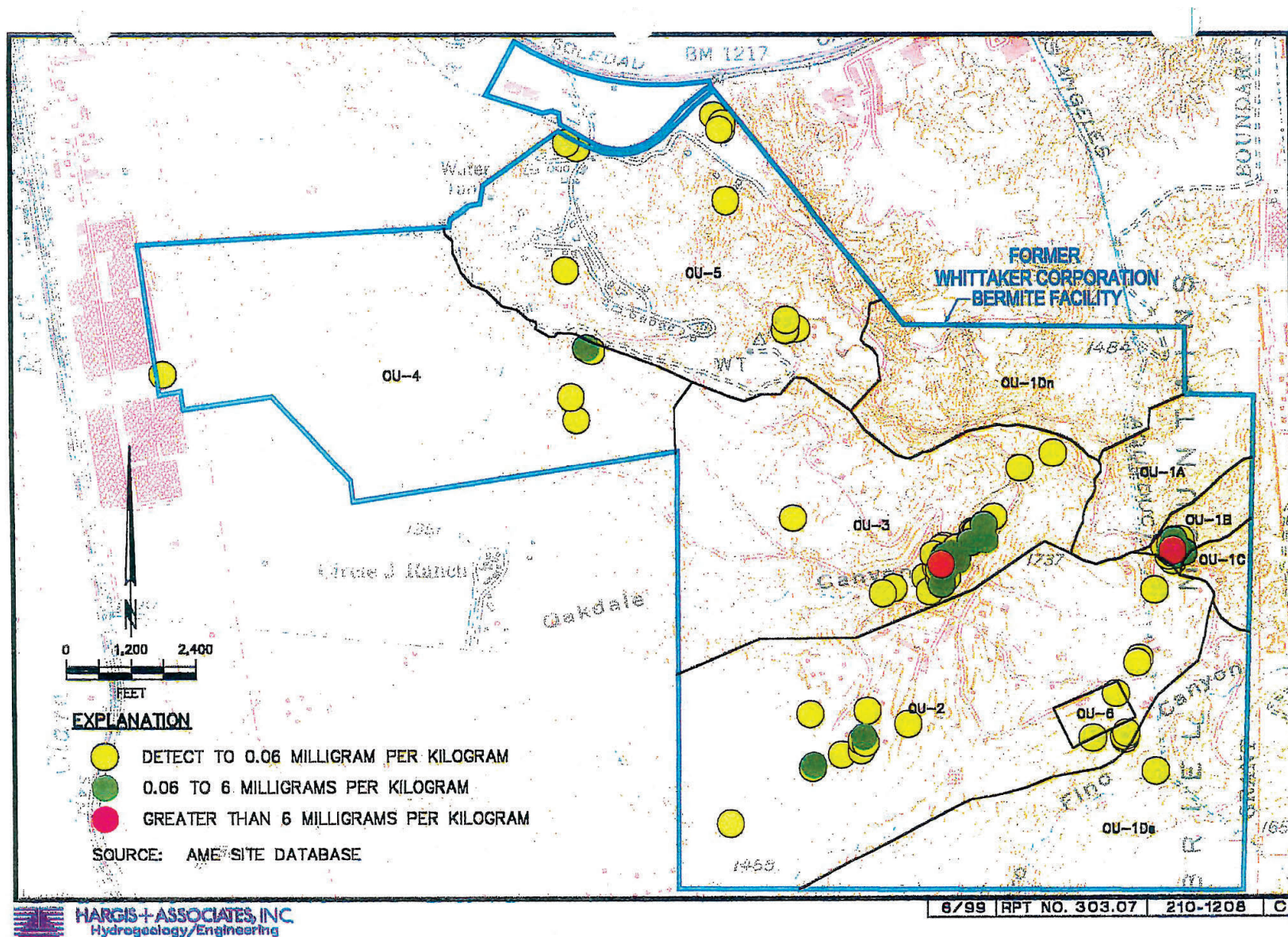
In addition to the documents listed in my 8/3/2020 Expert Report and my background and experience, I have reviewed the following documents during my preparation of this report.

1. DOD Contractors' Safety Manual for Ammunition, Explosives and Related Dangerous Material, Department of Defense, 10/1968
2. Groundwater Sampling and Analysis Plan RCRA Groundwater Monitoring Wells, Wenck Associates, 8/1988, SCVWA-DTSC-PRA-0006063-191
3. CA Department of Health Services Memorandum, 10/25/90, SCVWA=DTSC-PRA-0011519-21
4. Resource Conservation and Recovery Act Facility Investigation Work Plan, Acton Mickelson van Dam, 5/3/94, SCVWAWHIT2019-045222-439
5. Final Remedial Investigation Work Plan, Acton Mickelson Environmental, 8/29/95
6. Monthly Summary Report No. 16-February 1996, Acton Mickelson Environmental, 3/13/96, SCVWAWHIT2019-026671-5
7. Monthly Summary Report No. 21-July 1996, Acton Mickelson Environmental, 8/7/96, SCVWAWHIT2019-038241-3
8. Feasibility Study Work Plan, Acton Mickelson Environmental, 9/27/96, SCVWAWHIT2019-047403-55
9. Monthly Summary Report No. 23-September 1996, Acton Mickelson Environmental, 10/10/96, SCVWAWHIT2019-037423-8
10. Monthly Summary Report No. 25-November 1996, Acton Mickelson Environmental, 12/13/96, SCVWAWHIT2019-039311-3
11. Monthly Summary Report No. 28-February 1997, Acton Mickelson Environmental, 3/13/97, SCVWAWHIT2019-037226-9

12. DOD Contractors' Safety Manual for Ammunition and Explosives, 9/1997
13. Monthly Summary Report No. 43-May 1998, Acton Mickelson Environmental, 6/10/98, SCVWAWHIT2019-021541-4
14. Monthly Summary Report No. 48-October 1998, Acton Mickelson Environmental, 11/11/98, SCVWAWHIT2019-025378-81
15. Operable Unit 7 Work Plan Groundwater Remedial Investigation/Feasibility Study Conceptual Scoping Document and Work Plan, Hargis Associates, 7/2/99
16. Deposition of Barbara J. Mickelson, 3/3/02
17. Deposition of Glen Abdun-Nur, 3/25/02
18. Expert Report of Grant L. Ohland for Whittaker Corporation, 5/13/02
19. Deposition of Joseph F. Alibrandi, 5/15/03
20. Deposition of Whittaker Corporation, Through Eric G. Lardiere, Rule (30) (b) (5) Designee, 8/27/03
21. Site-Wide Remedial Investigation Operable Units 2 through 6, CDM, 7/7/06
22. Declaration of Phyllis Stanin, 1/12/07
23. Deposition of Cecile King, 5/7/09
24. Expert Report of Robert M. Zoch, Jr., P.E., 6/8/09
25. A Report on the Whittaker-Bermite Company, Jay L. Brigham, Ph.D., Morgan, Angel, and Associates, 8/24/09
26. A Rebuttal Report, Jay L. Brigham, Ph.D., Morgan, Angel, and Associates, 12/14/09
27. Declaration of Jeffrey S. Wright, 2/4/10
28. Declaration of Jay L. Brigham, Ph.D., 2/5/10
29. Declaration of Max Calkins, 2/8/10
30. Declaration of Robert Zoch, 2/8/10
31. Remedial Action Plan Operable Units 2 through 6, CDM, 11/30/10

32. Soil Vapor Extraction Progress Report First Quarter 2013 Operable Units 2 through 6, CDMSmith, 6/24/13
33. Remedial Action Plan-Operable Unit 7-Groundwater, AMEC, 12/18/14
34. Plaintiff Santa Clarita Valley Water Agency's Answers to Defendant Whittaker Corporation's Interrogatories, Set One, 5/13/19
35. 1<sup>st</sup> Quarter 2020 NPDES Monitoring Report, CDMSmith, 5/14/2020
36. Expert Report of Gaynor Dawson, GWD Consulting, 8/1/2020
37. Expert Report of Phyllis S. Stanin, 8/3/2020
38. Deposition of Gaynor Dawson, 8/11/2020
39. Summary Report for July 2020, GSI Environmental, 8/17/2020
40. Second Quarter 2020 General Waste Discharge Requirements Monitoring Report Northern Alluvium Area Hot Spots In-Situ Treatment, GSI Environmental, 7/30/2020

## **FIGURES**



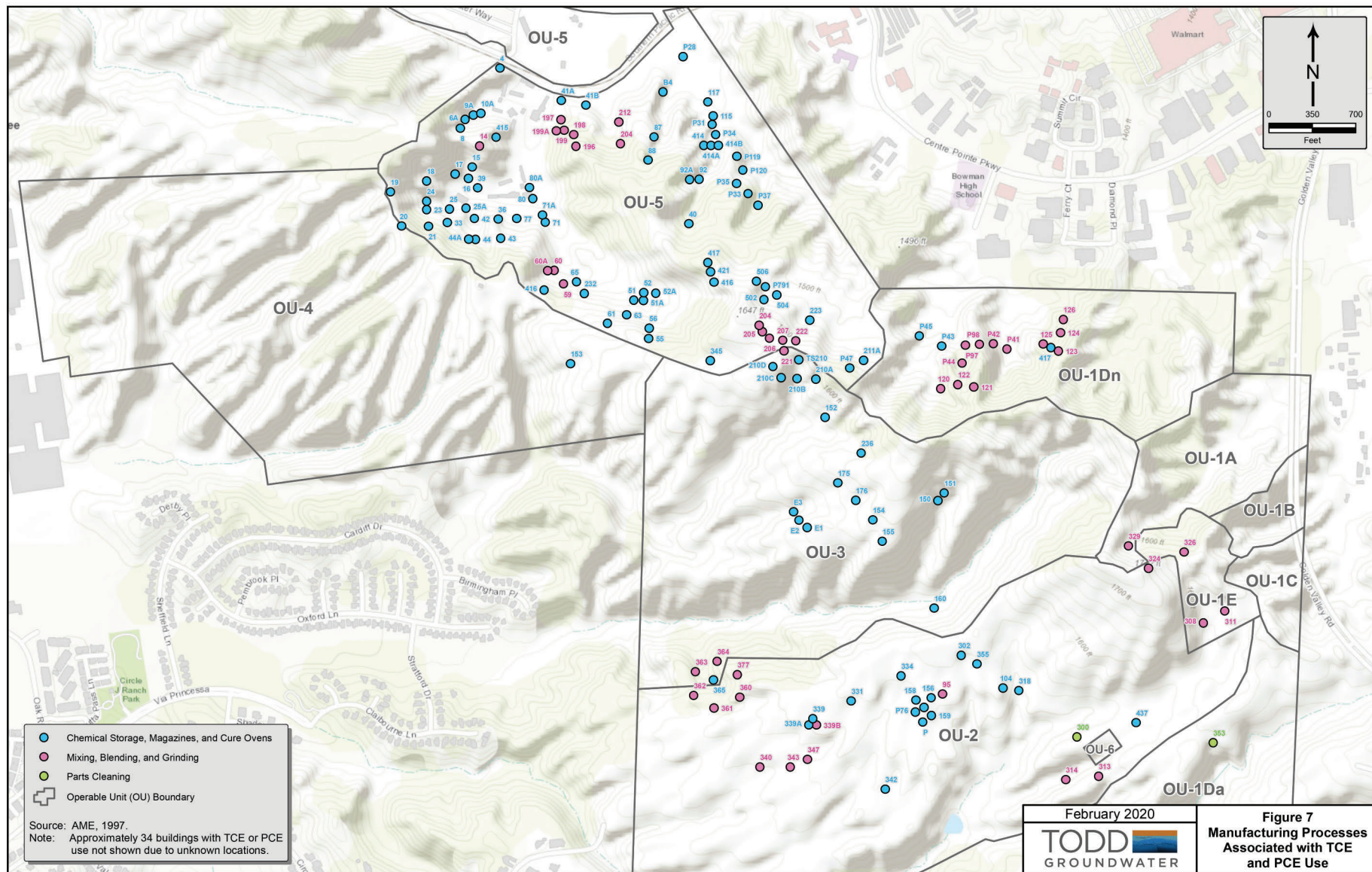
## Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.

Santa Clarita Valley Water Agency vs. Whittaker Corporation

Source: *Operable Unit 7 Remedial Investigation and Feasibility Study Conceptual Scoping Document*, Hargis, 7/2/99

Figure 1  
TCE Concentrations in Soil





## Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.

Santa Clarita Valley Water Agency vs. Whittaker Corporation

Source: *Expert Report of Phyllis S. Stanin, 8/3/2020*

Figure 2  
**Site Locations Associated with**  
**TCE and PCE Use**



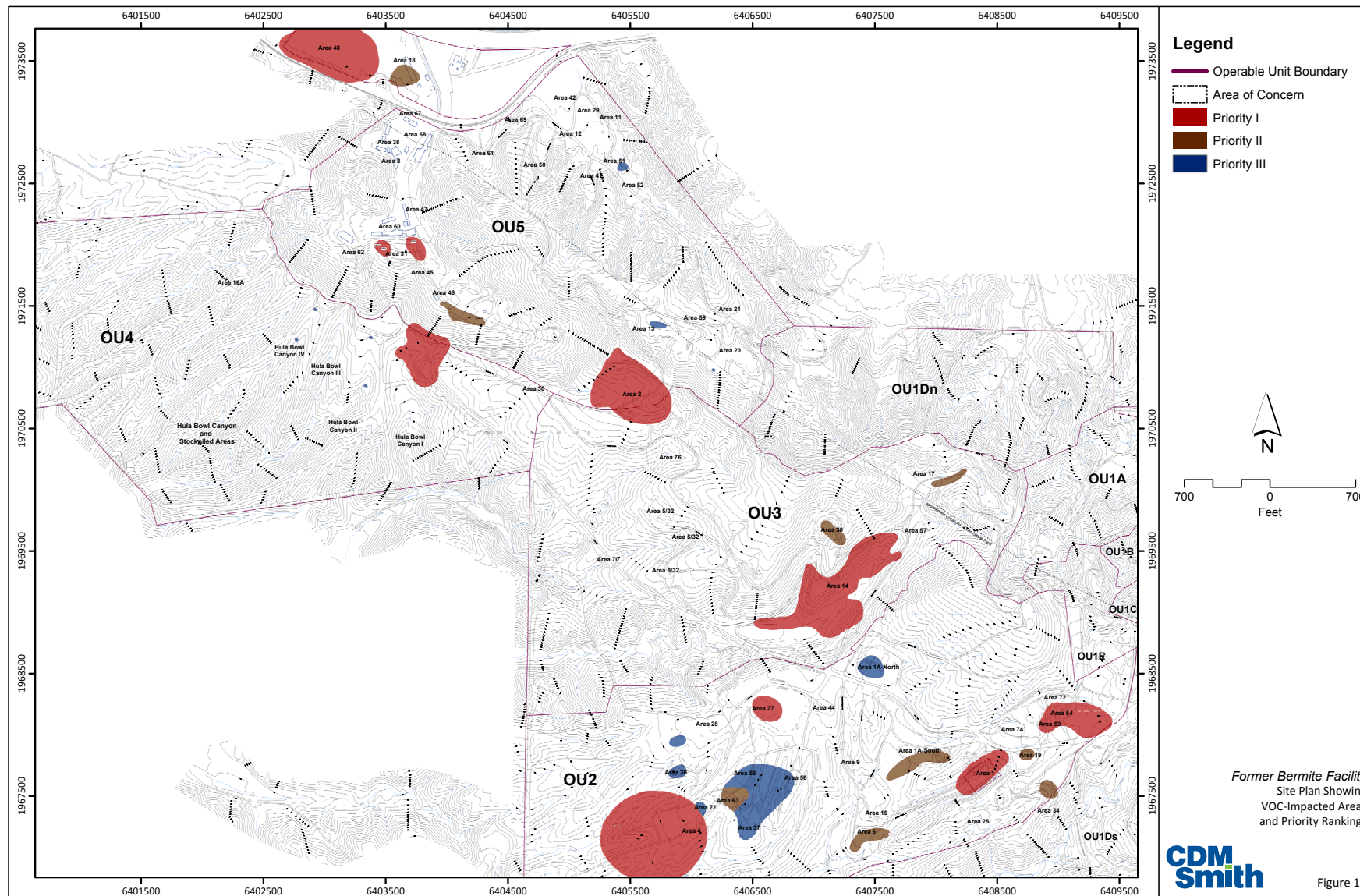
| Area Name   | Area No. | Previous Operations/<br>Potential Concerns  | Waste and Debris Observed                         | Media<br>Affected | Summary of Chemicals Detected/<br>Maximum Concentrations Reported*   |
|---|----------|---|---|-------------------|--|
| East Fork Landfill  | 17       | Landfill  | Metal, wood, rubber, plastic,<br>abandoned well   | Soil              | Cr VI (0.6 mg/kg), Cu (1,200 mg/kg), Hg (0.42 mg/kg),<br>Chlorate (32 mg/kg), Acetone (370 µg/kg),<br>2-butanone (35,000 µg/kg), pisetol (7,900 µg/kg),<br>xylenes (13,000 µg/kg), ethylbenzene (2,800 µg/kg)  |
|   |          |   |   | Soil Vapor        | cis-1,2-DCE (4.3 µg/l) CFC-12 (18 µg/l) xylenes<br>(3.1 µg/l)  |
|   |          |   |   | Ground<br>Water   | 2-butanone (160 µg/l), Acetone (20 µg/l),<br>cis-1,2-DCE (55 µg/l), waste oil (550 mg/kg)  |
| Burn Area Valley  | 14       | Burn area and disposal site   | Metal, wood, plastic, ash, some<br>red phosphorus | Soil              | Be (0.9 mg/kg), Cr VI (1.1 mg/kg), Pb (160 mg/kg),<br>Hg (7 mg/kg), Al (6,800 mg/kg), TCE (41,000,000<br>µg/kg), Carbon disulfide (120,000 µg/kg),<br>PCE (25,000,000 µg/kg), 1,1,1-TCA (8,000,000 µg/kg),<br>HMX (2.0 mg/kg), Dibutyl phthalate (4,000 µg/kg),<br>Total HxCDD (1,378 ng/kg) |
|   |          |   |   | Soil Vapor        | 1,1,1-TCA (6,100 µg/l), 1,1-DCE (23.18 µg/l),<br>PCE (8,700 µg/l), TCE (74,000 µg/l)   |
| Test Range (Former Buildings<br>102 and 107)  | 57       | Test fired ammunition rounds and<br>projectiles   | DU  | Surface Soil      | Gamma radiation (146,686 net counts per minute)  |
| Former Building 371   | 30       | Former aboveground 500-gallon<br>wash water tank/<br>Potential releases from wash water<br>tank | None  | Soil Vapor        | 1,1-DCE (97 µg/l), TCE (12 µg/l)   |
| <p>*Summary of chemicals detected generally includes metals and inorganic compounds reported at concentrations significantly above background, and most prevalent and/or highest concentration of organic compounds reported.<br/>           Cr VI = Chromium VI; Cu = Copper; Hg = Mercury; pisetol = para-isopropyltoluene; cis-1,2-DCE = cis-1,2-Dichloroethene; CFC-12 = Dichlorodifluoromethane; Be = Beryllium; Pb = Lead;<br/>           Al = Aluminum; TCE = Trichloroethene; PCE = Tetrachloroethene; 1,1,1-TCA = 1,1,1-Trichloroethane; HMX = Cyclotetramethylene tetranitramine; HxCDD = Hexachlorodibenzodioxin;<br/>           1,1-DCE = 1,1-Dichloroethene; DU = Depleted uranium.</p> <p>mg/kg = milligrams per kilogram; µg/kg = micrograms per kilogram; ng/kg = nanogram per kilogram; µg/l = micrograms per liter.</p> |          |   |   |                   |  |

# Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.

Santa Clarita Valley Water Agency vs. Whittaker Corporation

Source: Draft Remedial Investigation Report, Acton Mickelson Environmental, 1/1997

Figure 3  
Soil Investigation Results  
Burn Valley Area



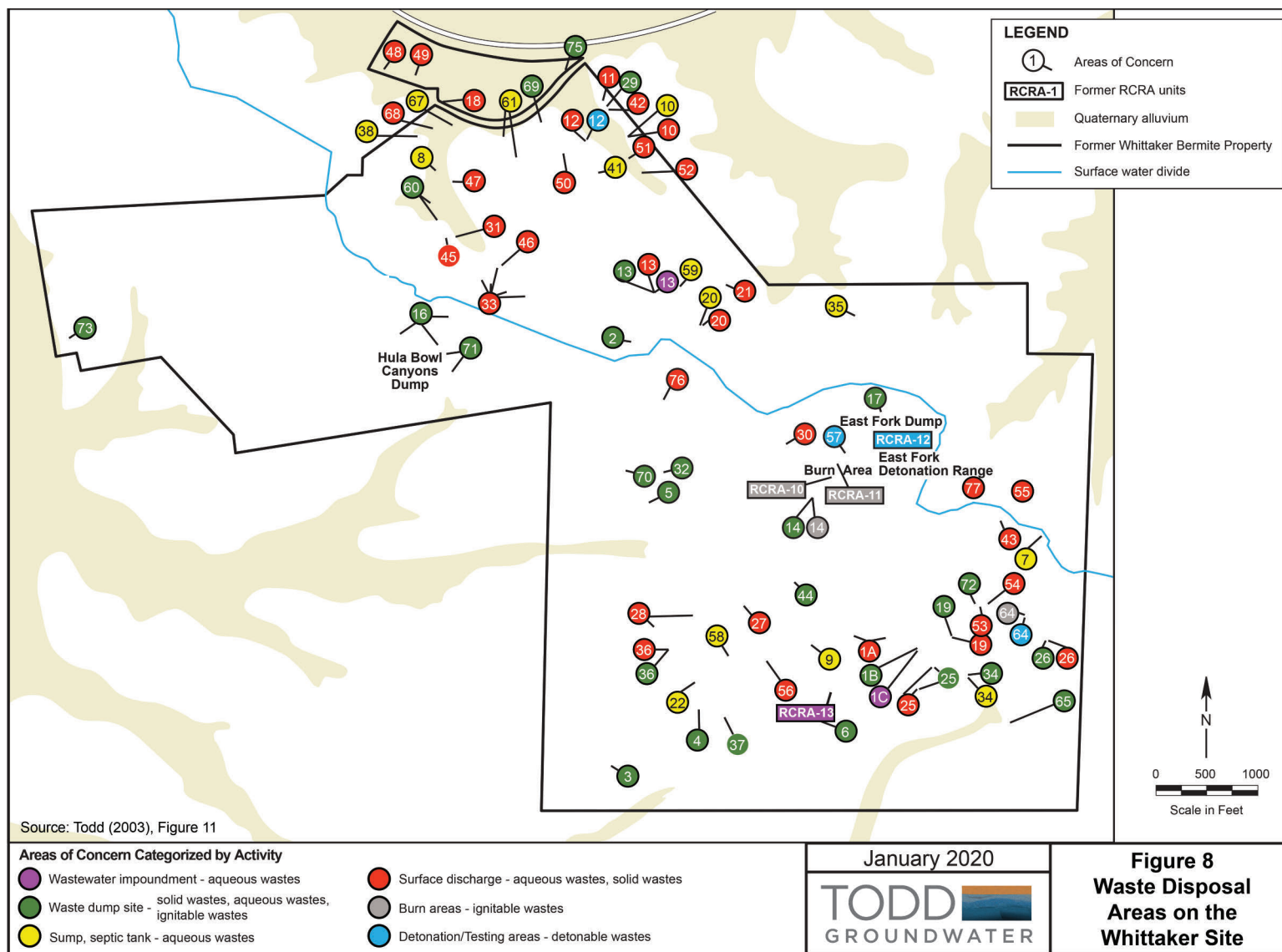
## Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.

Santa Clarita Valley Water Agency vs. Whittaker Corporation

Source: *Soil Vapor Extraction Progress Report First Quarter 2013*  
*Operable Units 2 through 6*, CDMSmith, 6/24/13

Figure 4  
**VOC Impacted Areas  
 Identified by Whittaker**



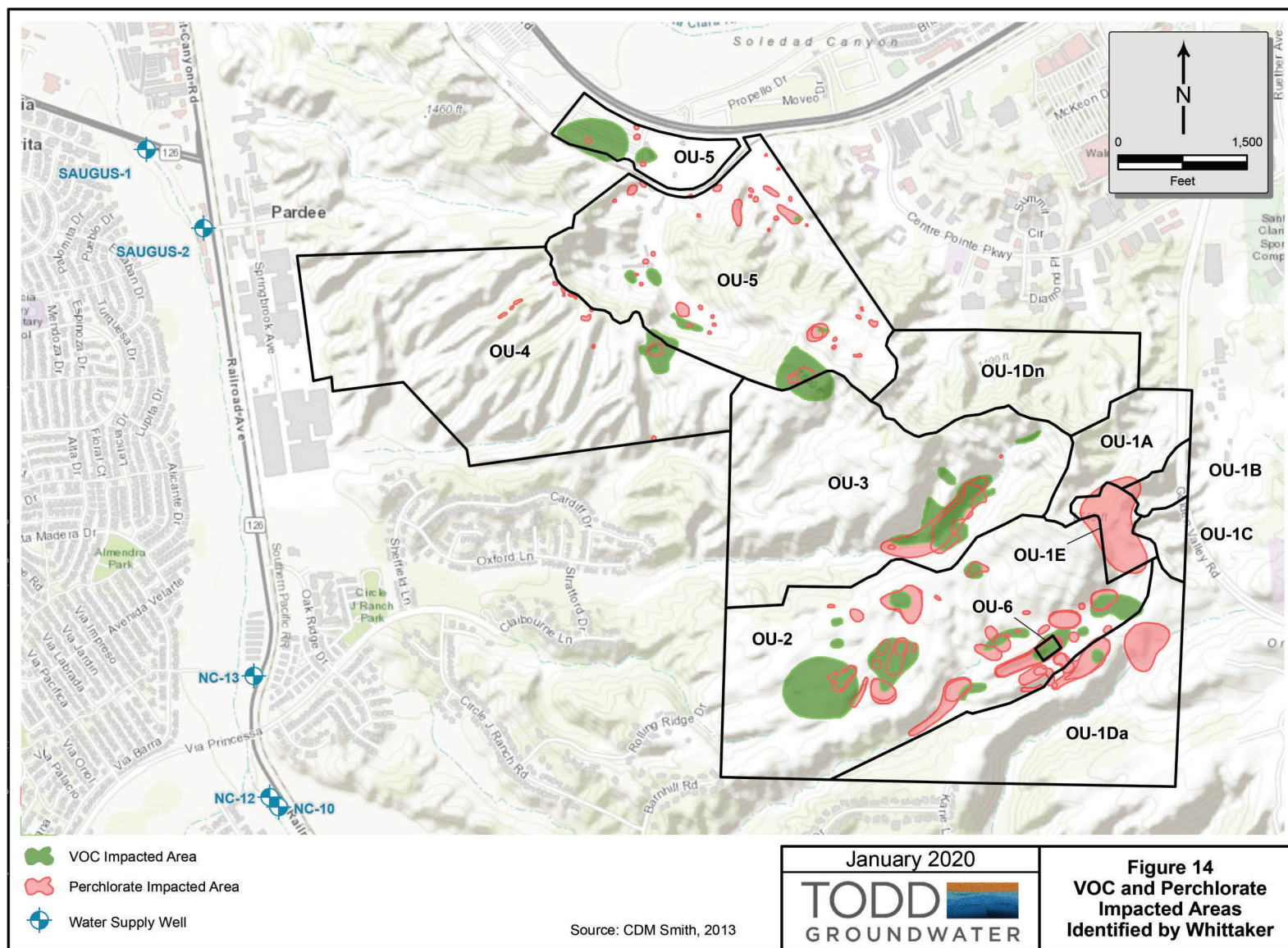


## Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.

Santa Clarita Valley Water Agency vs. Whittaker Corporation

Source: *Expert Report of Phyllis S. Stanin, 8/3/2020*

Figure 5  
Waste Disposal Areas



# **Rebuttal Expert Report of Richard J. Hughto, Ph.D., P.E.**

Santa Clarita Valley Water Agency vs. Whittaker Corporation

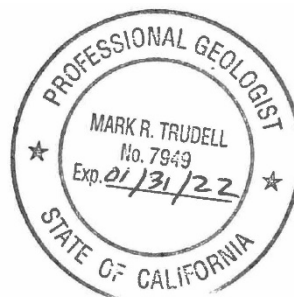
Source: *Expert Report of Phyllis S. Stanin, 8/3/2020*

Figure 6  
VOC and Perchlorate  
Impacted Areas  
Identified by Whittaker

## **EXHIBIT H**

**EXPERT REBUTTAL REPORT****MARK R. TRUDELL, PhD, PG, CHG**

Santa Clarita Valley Water Agency, Plaintiff, vs. Whittaker Corporation  
And Does 1-10, Inclusive; Defendants United States District Court  
Central District of California September 4, 2020



A handwritten signature in black ink that reads "Mark R. Trudell".

---

Mark Trudell, PhD, PG, CHG

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## Review of Whittaker Expert Reports and Opinions

I previously provided an expert report in this matter dated August 3, 2020. I was asked to review the following expert reports provided by Whitaker related to the hydrogeology and contamination of the Whittaker-Bermite site, the Saugus Industrial Center, and Plaintiffs' wells, and to provide rebuttal information to selected expert opinions as to the sources of contamination in Plaintiffs' wells. The following reports are addressed in this rebuttal:

- Expert Report of Gary Hokkanen, in the matter of Santa Clarita Water Agency vs Whittaker Corporation and Does 1-10. 3 August, 2020. ("Hokkanen Report")
- Expert Report of Anthony D. Daus, III, PG, BCES, U.S. District Court, Central District of California, Southern Division, No.: 2:18-cv-6825. Report prepared for Bassi Edlin Huie & Blum, 3 August, 2020. ("Daus Report")

The opinions I express herein supplement and do not change the opinions I set forth in my August 3, 2020 Expert Report. My opinions are to a reasonable degree of scientific certainty. I reserve the right to modify my opinions and conclusions, including those set forth in my August 3, 2020 Expert Report, based upon my review of additional information and/or relevant materials. Further, I reserve the right to modify, change or add to my opinions or conclusions, and to offer additional opinions as further information becomes available.

## Rebuttal to Opinions in the Hokkanen Report

***Opinion 4. Although perchlorate has impacted Water Agency groundwater production wells downgradient of the Bermite site, based on differences in migration rates and supported by water quality data, VOCs from the Bermite site have not migrated to Water Agency groundwater production wells and the Bermite site is not a source of the VOC detections in the wells at issue.***

### Rebuttal Comments:

Mr. Hokkanen correctly points out that groundwater advection (the bulk flow of groundwater) is the primary mechanism controlling the migration of chemicals dissolved in the groundwater. However, it appears that he did not evaluate the role of advection in the migration of contaminants from the Whittaker Site to the Saugus well. He shows groundwater elevation contour maps from a single quarter (September 2019) of the approximately 38 quarters of data available, and while the map shows the general direction of horizontal groundwater flow at that particular time it does not appear that he used these maps to calculate the horizontal hydraulic gradient or to estimate groundwater advective velocity, even though there are numerous hydraulic conductivity (K) values available from Whitakers' own aquifer testing program that could be used for that calculation.

Once the groundwater velocity has been estimated, it is straightforward to calculate the relative velocity of a retarded contaminant: the contaminant velocity is simply the groundwater velocity (advective velocity) divided by the retardation factor. Hokkanen cites literature studies of VOC retardation giving a retardation factor for TCE to 2 to 2.5, and approximately 5 for PCE. These



factors are in reasonable agreement with the retardation factors that I calculated independently in my expert report (Trudell, 2020): 2.6 and 5.51 for TCE and PCE, respectively.

For example, using a groundwater velocity of 630 ft/year (CH2MHill, 2015, p2-4) and assuming a potential travel time of 55 years (Stanin Expert Report, 2020), and calculating travel distance as groundwater velocity times travel time, it is possible to estimate perchlorate plume migration distance of 34,650 ft (6.6 miles), with a corresponding TCE plume migration distance 39% of the perchlorate migration distance, i.e. 13,514 ft (2.6 miles) and for PCE a travel distance 18% of the perchlorate distance, i.e., 6,237 ft (1.2 miles).

It should be noted that the contaminant migration distances are for an average concentration, that is, 50% of the source concentration ( $C/Co = 0.5$ ). As noted in the Trudell (2020) Expert Report the first arrival of low concentrations of contaminants will be appreciably earlier (i.e., the travel distance will be longer over the same travel time) than these potential travel times using the average concentration.

Estimating the distance from OU-4 source areas to the Saugus 2 well as 5500 feet (Trudell, 2020) it is clear that there is adequate travel time from the time of release at the Whittaker site for the VOC plumes not only to migrate past the OU-4 site boundary, but to travel all the way to the Saugus 2 well, even for arrival at the average concentration. Again, the first arrival of much lower than the average concentrations could be significantly earlier.

In the absence of analysis of groundwater velocity or advection in the Hokkanen Report, it appears that the primary basis for his opinion is the low and sporadic detections of VOCs along the western boundary of OU-4, e.g., monitoring well locations RMW-08, PZ-09, and MP-01. However, Hokkanen's opinion does not recognize that the main contaminant migration pathway from OU-4 source areas (reflecting the average groundwater flow direction) is across the northern boundary of OU-4, versus the western boundary, to the Saugus wells. This pathway is shown by the particle tracking modelling conducted by CH2MHill (2004, Figure 2-25) for Saugus 1. This pathway is also illustrated by Whittaker's own perchlorate plume map AECOM 2019 (Figure 5-d) that shows the perchlorate plume core (greater than 60 ug/L) migrating from OU-3 and OU-4 across the northern OU-4 boundary and then off-property to Saugus 1. In the Stanin (2020) Expert Report there is also an explanation of a plausible migration pathway across the southern boundary of OU-4. So, although there is little evidence of VOC migration across the western boundary of OU-4, that is not required for VOCs and perchlorate to migrate to the Saugus wells.

There are several explanations for the observed migration pathways to the north or south of OU-4, versus the west. First, under non-pumping conditions, which occurred for decades before the installation of the Saugus wells in 1988, and resumed during the 13-year hiatus in Saugus pumping from 1997 to 2010, the natural groundwater flow direction was mainly to the northwest, not west, but parallel to the Hosler Fault, and other faults that act as barriers or partial barriers to groundwater flow. In this case, groundwater flow is parallel to the faults because, by definition, groundwater elevation contours must intersect an impermeable boundary at right angles, and groundwater flow is at right angles to the groundwater elevation contours, that is, parallel to the fault.

This flow direction takes groundwater flow to the northwest, not to the west, and across the northern OU-4 boundary, not the western OU-4 boundary. Moreover, the VOC plume to the north of OU-4 has not been delineated, so its downgradient extent has not been determined. It

could easily extend to the Saugus wells, and potentially following this pathway even further downgradient.

The western boundary of OU-4 is located within the footprint of the perchlorate plume, but not in the footprint of the VOC plume. There are a number of possible explanations for this:

- Perchlorate sources areas in OU-3 are widely distributed, and most, but not all, are also VOC sources, however the contribution of those that are only perchlorate sources has produced a wide perchlorate plume that has coalesced from the multiple OU-3 sources
- Groundwater flow patterns to the west of the Whittaker site have been influenced by pumping of the Saugus wells. Prior to the installation of these wells in 1988, the same year the first Whittaker monitoring wells were installed, groundwater flow followed the natural groundwater flow direction to the northwest, controlled by the bounding faults and other factors. Once the Saugus wells start pumping, groundwater flow directions changed, as indicated by the particle tracking modelling conducted by CH2MHill (2004, Figure 2-25), which show Saugus 2 drawing water from the east and southeast of the Whitaker Site, allowing the perchlorate plume to widen. This situation is further complicated by the fact that the Saugus wells pumped for 9 years (1988 to 1997), then were shut down for 13 years (1997 to 2010), and then resumed pumping. The resulting variations in the groundwater flow field invariably influenced perchlorate plume migration from Whitaker site.
- Transverse dispersion increases the width of the plume and is proportional to the longitudinal dispersion in the downgradient direction of groundwater flow. The perchlorate plume is much longer than the VOC plume so it is reasonable to expect more transverse dispersion; resulting in a wider perchlorate plume;

Based on plume extent mapping by Whitaker's consultant, AECOM in 2014 (Figure 7c), the perchlorate plume is approximately 14,000 feet long, from the eastern end of OU-3 to the undelineated downgradient extent, so this is probably a minimum plume length. From the same figure, the TCE plume length, again from the eastern end of OU-3, is about 6200 feet (also not delineated in the northerly, downgradient direction), or about 44% of the perchlorate plume length, which is in reasonable agreement with the theoretical ratio of 39% based on retardation factors.

The key question is this: Why is the TCE plume from the Hula Bowl Canyon I source in OU-4 so short that according to Hokkanen, it has not reached the property boundary, which is only 2300 feet, from the source area to the north property boundary? If this plume length was correct, the perchlorate plume length would only be 5,980 feet (based on retardation factor proportions), and not 14000 feet. Presumably the Hula Bowl Canyon I source in OU-4 is contemporaneous with the OU-3 sources, so the travel time should be similar, and the plume length should be similar, i.e., on the order of 6200 feet. Hokkanen assumes that the contamination in OU-4 is delineated to reach his conclusion, but as discussed in my rebuttal to the Daus opinion 4 below, The VOC plume in OU-4 has not been fully delineated and thus it is incorrect for Hokkanen to draw conclusions based on the extent of the VOC plume. Because the TCE plume is not delineated north of the OU-4 boundary, the TCE plume length from OU-4 is unknown, but if it is in fact on the order of 6200 feet (like the OU-3 TCE plume), that takes the OU-4 TCE plume well past the Saugus 1 well that is about 5500 feet from the Hula Bowl Canyon I source. Consequently, it is completely reasonable that the TCE plume from the OU-4

source has reached the Saugus 1 well, and potentially beyond, by migrating across the northern boundary of OU-4.

**Opinion 5. VOCs from the Bermite Site have not impacted the Water Agency's groundwater production wells V-201 and V-205.**

**Rebuttal Comments:**

The rebuttal to Hokkanen Opinion 4, above, demonstrates the plausibility that VOCs from the Whitaker Site have reached the Saugus 1 and 2 wells, after they were shut down due to perchlorate contamination from the Whitaker Site in 1997.

The Valencia wells V-201, V-205 and V-157 are downgradient of the Saugus wells and the Whittaker Site, and have historically had detections of perchlorate and VOCs. The earliest detection of VOCs in those wells was a detection of chloroform in 2011 (V-201; 0.57 ug/L). TCE began being detected consistently in 2012 through 2018 between 0.5-1.0 ug/L in V-205; TCE in V-201 was not detected in 2012 and although there wasn't data for 2013-2017, similar TCE concentrations were reported in 2018.

During the 13 year period from 1997 to 2010, when the Saugus wells were shut down due to perchlorate contamination, the perchlorate plume, which was already at the Saugus wells, would have continued to migrate to the west/northwest, in the downgradient direction, toward the Valencia wells. Any VOCs present near the Saugus wells at that time would have similarly continued to migrate downgradient toward the Valencia well. Once pumping of Saugus wells restarted (in 2010), the capture zones of the two Saugus wells contain a large portion of contamination migrating from the Whittaker Site, and thus the Saugus wells provide a level of protection to the Valencia wells from further contamination from the Whittaker Site. This observation would apply equally to historical perchlorate and VOCs plumes that may have reached the Saugus wells at the time they were shut down. With the Saugus wells having been returned to continuous production for over nine years, it is likely that these wells are capturing some of the contamination that may have reached the Valencia wells during the period when the Saugus wells were offline, however some of the historic VOC contamination downgradient of the Saugus wells could still be in transit to the Valencia wells. .

***Opinion 6. VOCs have contaminated groundwater at the SIC Site and there is a plausible pathway for groundwater from the SIC Site to migrate to the Water Agency groundwater production wells due to the unique geology of the SIC Site and its proximity to the groundwater production wells.***

**Rebuttal Comments:**

There is no clear pathway for migration of TCE from the Saugus Industrial Center to the Saugus wells. TCE contamination in groundwater at the Saugus Industrial Center is mainly within the alluvium, and the TCE plume extends to the west, past the Saugus 1 well in the alluvium and shallowest Saugus Formation, but the full lateral extent has not been delineated. However, the vertical extent of this contamination appears to be limited to the alluvium, based on non-detect groundwater sampling results in deeper alluvium and upper Saugus monitoring wells, including



SG1-HSU3a, SG1 HSU3b, and SG1-HSU1, all in close proximity to the Saugus 1 well (CH2MHill, 2015, Figure 5-5). Low-level TCE concentrations (e.g., ~ 2 µg/L) have been detected in the deeper Saugus Formation at SG1-HSU3c (720 feet bgs). However, there is a 500-foot vertical gap between the three shallow Saugus non-detections and the low TCE detection in the deeper Saugus HSU IIIc unit.

Hokkanen relies on an interpretation of upward folding of the Saugus Formation in the vicinity of the SIC Site that allows the HSUs of the Saugus formation to rise up to near surface (below the alluvium) near the SIC Site, and then flatten out in the vicinity of Saugus 1. There is no explanation as to how or why that occurs. This conceptual site model has contamination entering the Saugus Formation beneath the alluvium and migrating into Saugus HSUs 1 to III, then migrating laterally to the Saugus 1 well. In this case, it is likely that such contamination would pass through the SG1 monitoring well location and VOCs would be detected in these units. However, there are no VOC detections in HSU I to HSU IIIB wells at this monitoring well location. The detection of TCE in well SG1-HSU3C is isolated from detections in the alluvium and shallower Saugus formation units, likely reflecting a more distant source of contamination, E.g., OU-4 or OU-3.

Furthermore, injection and pumping tests of Saugus Formation wells, conducted by RC Slade and Associates (2001), with monitoring of hydraulic response in alluvial aquifer monitoring wells, showed no response to Saugus pumping or injection in the alluvial wells near V-201, indicating that these two units are not hydraulically connected.

In addition to these factors, there is also a difference in the chemical signature of groundwater VOCs at the SIC site and the VOCs that have been detected in the Saugus wells. As reported by CH2MHill (2015) TCE, PCE, chloroform, and 1,1-DCE are the most frequently detected VOCs in Saugus 1 or Saugus 2. Of these, only TCE, PCE, and chloroform have been detected in Saugus Industrial Center wells, and only TCE and chloroform appear to have migrated offsite from SIC at concentrations that exceed the respective MCLs. However, as noted above, the TCE plume is vertically delineated near Saugus 1 by monitoring wells at the AL-12/SG1-HSU1 and SG1-HSU3 cluster, and extends to a depth of approximately 190 feet bgs (alluvium) near Saugus 1, 300 feet above the top of the perforations in that well (490 feet bgs; CH2MHill, 2015, Figure 5-5).

## Rebuttal to Opinions in the Daus Report

***Opinion 1: The Site investigation and remedial measures implemented by Whittaker have been performed under the direct supervision of the DTSC and to the DTSC's satisfaction.***

### Rebuttal Comments:

The Daus and Hokkanen reports provide a timeline of regulatory action driven by DTSC and subsequent remedial actions conducted by Whitaker. Reconstructing the timeline from these two reports is as summarized below (**Hokkanen Report** items in **bold** text).

- September 1987 and December 27, 1987: Closure plan approved by U.S. EPA and DHS (DTSC)
- **1990 to 2002 (SVE) system operated in OU-6 to remediate soil gas and soil**

- November 1994: Consent Order executed by DTSC and Whittaker Corporation for cleanup of 77 solid waste management units (DTSC 1994)
- February 2001, SCLLC (successor to Whittaker) entered into Enforceable Agreement with DTSC for testing, investigation, and remediation of the Site (DTSC 2001)
- May 2002, the Office of the Attorney General notified SCLLC and Whittaker that SCLLC was in default of its obligations under the February Enforceable Agreement.
- November 2002, Imminent and Substantial Endangerment Determination and Order and Remedial Action Order issued to Whittaker by DTSC to Conduct all Removal Actions in accordance with the work plans approved by the DTSC (DTSC 2002)
- **2006 to 2010: Soil remediation in OU-1**
- January 2011 FS for OU-7 groundwater) prepared by Environ (2011)
- December 2014, the RAP for OU-7 was submitted to the DTSC
- **October 2014 to November 2015: Soil remediation conducted in OU-5.**
- **September 2015 to July 2019. Remediation of soil in OU-2 through OU-4**
- **2009 to 2011: Groundwater extraction and monitoring wells installed in OU-7, HSU S-IIIa and S-IIIc.**
- **2018: OU-7 groundwater extraction system began full-scale operation**

Rather than a proactive and cooperative relationship between DTSC and Whittaker, this timeline shows an increasing level of DTSC regulatory pressure brought to bear by DTSC, presumably due to non-compliance and/or slow progress by Whittaker on cleaning up contaminated sites on the Bermite property.

This timeline shows that Whittaker took over 21 years (1994 to 2015-2019) from the time of the 1994 Consent Order<sup>1</sup> to implement cleanup of soil in OUs 2 to 4; one year less to clean up soil in OU-5. The start of groundwater cleanup in OU-7 took 24 years to implement from the time of the 1994 Consent Order.

After decades of Whittaker's slow progress on compliance with regulatory orders, it is ironic that now they are relying on the approval of Mr. Jose Diaz, a DTSC Brownfields Coordinator for implementing of the groundwater RAP, 24 years after the 1994 Order, as a cornerstone of Mr. Daus' argument that "Site investigation and remedial measures implemented by Whittaker have been performed under the direct supervision of the DTSC and to the DTSC's satisfaction" That appears to be a vast overstatement of Mr. Diaz' deposition where he replied "yes" to the question "For the on-site investigation for groundwater cleanup, ... has Whittaker pretty much completed their remedial action plan for addressing VOCs".

The regulatory record and remedial performance of Whittaker clearly represent a go-slow approach that has frustrated DTSC, causing increasing levels of regulatory action over time. It is probably fair to conclude that Whittaker did as little as they could, and took as long as they could, to comply with the 1994 Consent Order. This track record of delay can only raise the key question: How much environmental damage to groundwater to groundwater occurred over the two-plus decades it took Whittaker to start cleaning up this site.

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<sup>1</sup> Among other things, the 1994 Consent Order required Whittaker to address solid waste management units that were previously not disclosed in the Whittaker's 1987 RCRA Facility Assessment that was subsequently discovered by DTSC through a search warrant issued by DTSC to Whittaker (1994 Consent Order Section 2.3.3.2)

***Opinion 4: The VOC plume in OU-3 and OU-4 has been sufficiently delineated to implement the approved groundwater remedy.***

**Rebuttal Comments:**

The TCE plume in OU-4 is not delineated across the north boundary of the Whitaker Site, nor is it delineated off-site (see AECOM 2014, Figure 7c). This area is downgradient of the approved groundwater remedy, and there is no mention of how this plume will be fully delineated and how the downgradient contamination will be captured. Meanwhile, the downgradient extent of the off-site VOC plume from OU-4 has neither been delineated or remediated. The lack of delineation of the VOC plume suggests that there is insufficient information to evaluate the effectiveness of the proposed remedy on VOC containment, particularly for the portion of the VOC plume that has move off-property, to the north.

***Opinion 5: The groundwater extraction system is providing containment of the VOC plume in SIIIa in OU-3 and OU-4.***

**Rebuttal Comments:**

The groundwater extraction system in OU-3 and OU-4 began operation in 2018 and the system has not operated long enough to reach a conclusion on its long term effectiveness. Even if the groundwater extraction system is effective in capturing and providing containment of the recent on-Site VOC plume in HSU SIIIa in OU-3 and OU-4, Mr. Daus fails to address the large mass of contaminants that migrated away from the site prior to 2018. His opinion does not address the over 50 years (from the mid-1960s to 2018) for which contaminants to migrate away from this site. Where did they go, and where are they now?

## **References**

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- CH2M Hill, February 4, 2004, Regional Groundwater Flow Model for the Santa Clarita Valley, Santa Clarita, CA, Draft Report, Model Development and Calibration, Submitted to Upper Basin Water Purveyors
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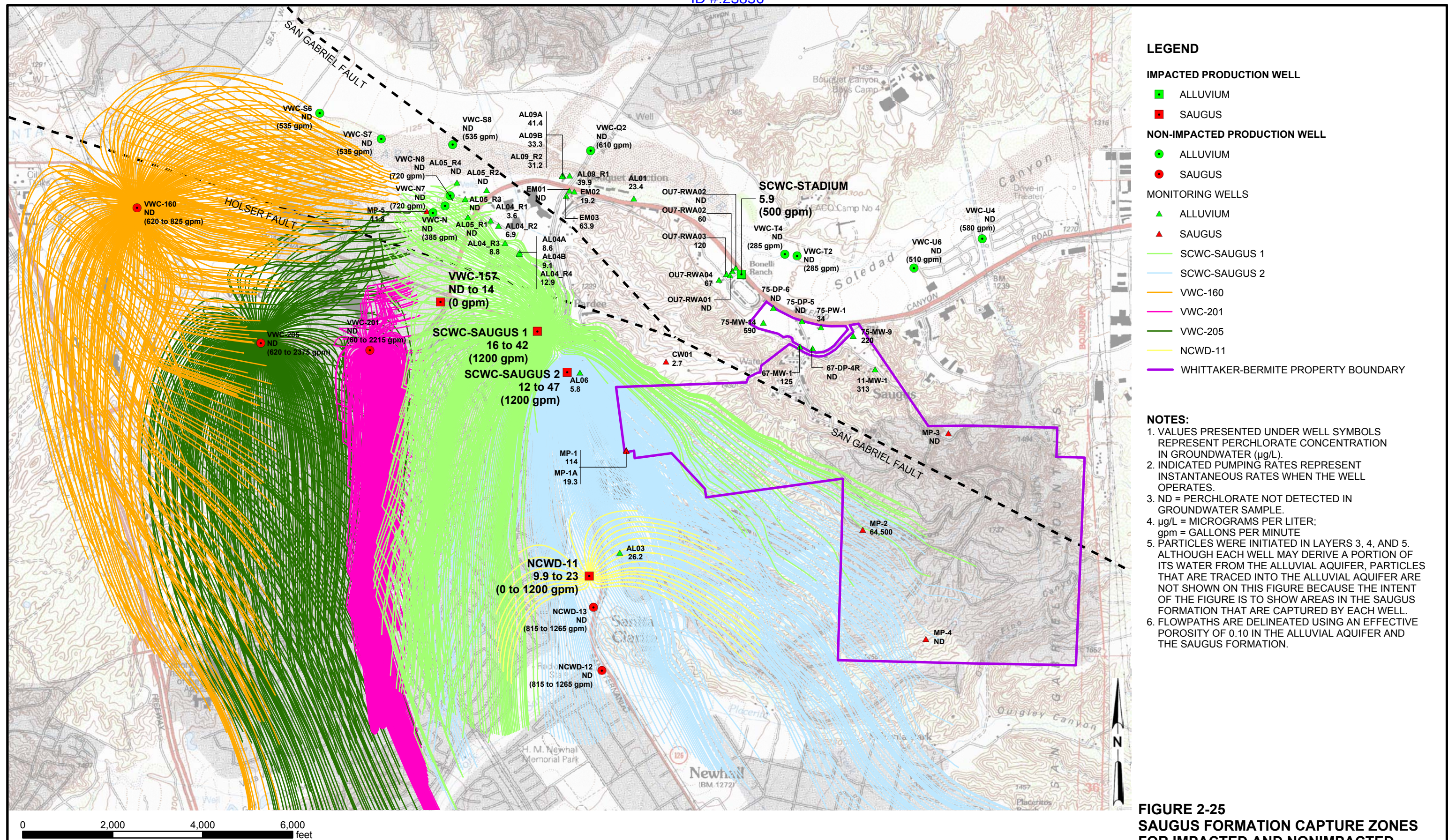
Richard C. Slade & Associates (RCS). 2001. Assessment Of The Hydrogeologic Feasibility Of Injection And Recovery Of Water In The Saugus Formation, Santa Clarita Valley, California. Prepared for Newhall Ranch Company, February 2001.

Stanin, P., 2020. Expert Report of Phyllis S. Stanin, Santa Clarita Valley Water Agency, Plaintiff, Vs. Whittaker Corporation and Does 1-10, Inclusive; Defendants United States District Court, Central District Of California. Aug. 3, 2020.

Trudell, M. 2020. Expert Report of Mark R. Trudell, PhD, PG, CHG. August, 2020

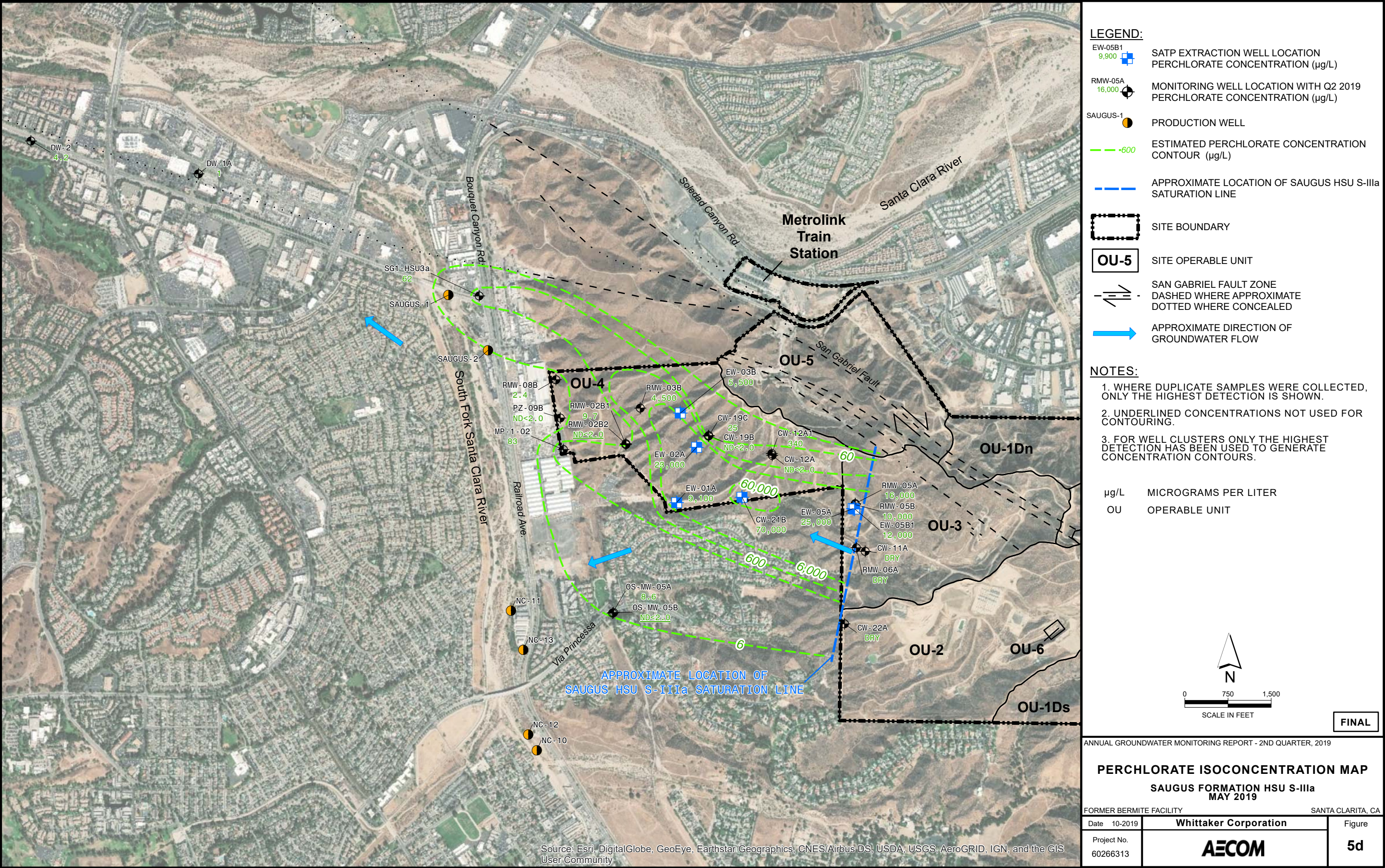
## **Figures Cited From Reference Reports**



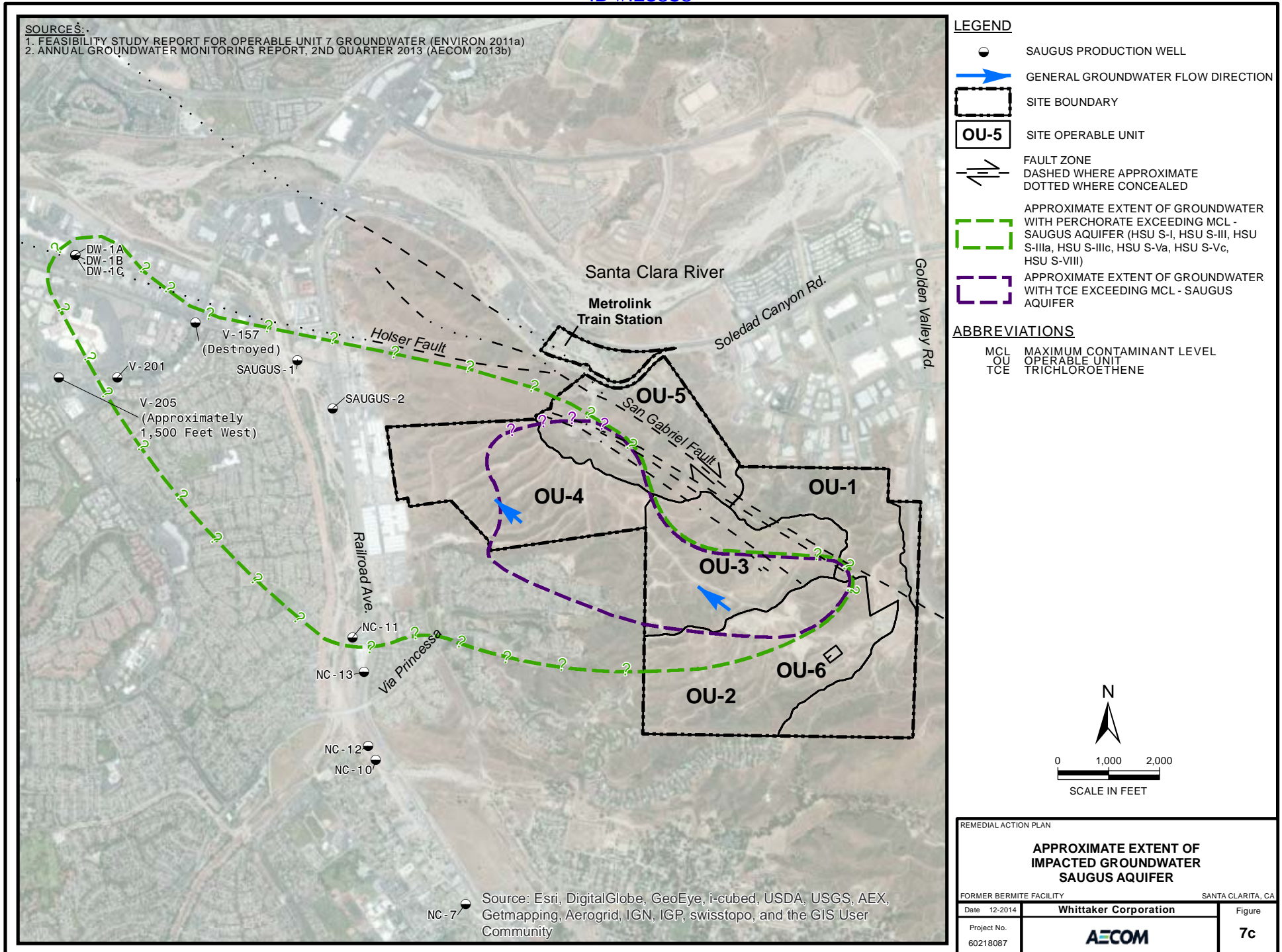


**FIGURE 2-25**  
**SAUGUS FORMATION CAPTURE ZONES**  
**FOR IMPACTED AND NONIMPACTED**  
**PRODUCTION WELLS**  
ANALYSIS OF PERCHLORATE CONTAINMENT IN  
GROUNDWATER NEAR THE WHITTAKER-BERMITE PROPERTY  
SANTA CLARITA, CALIFORNIA

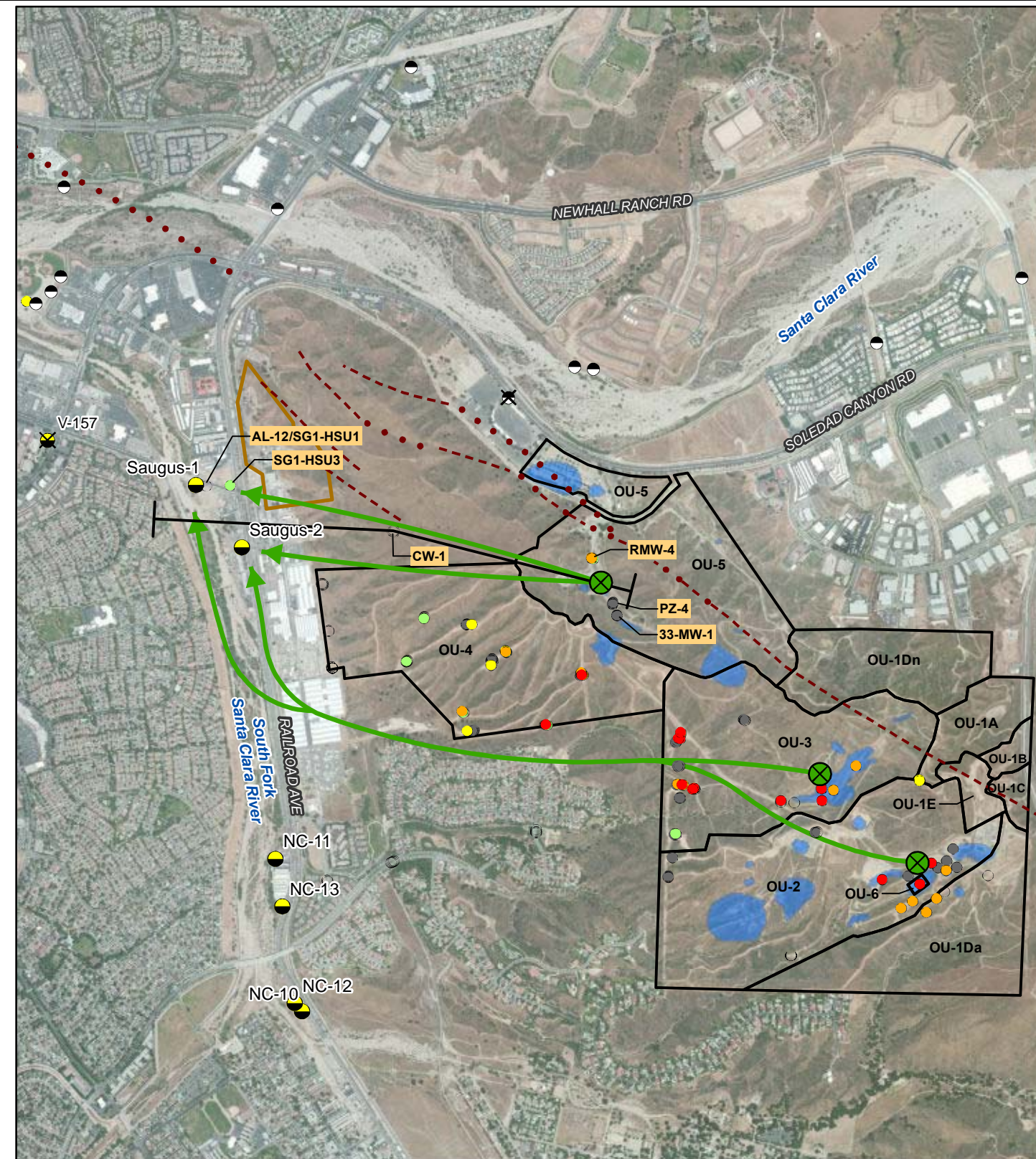










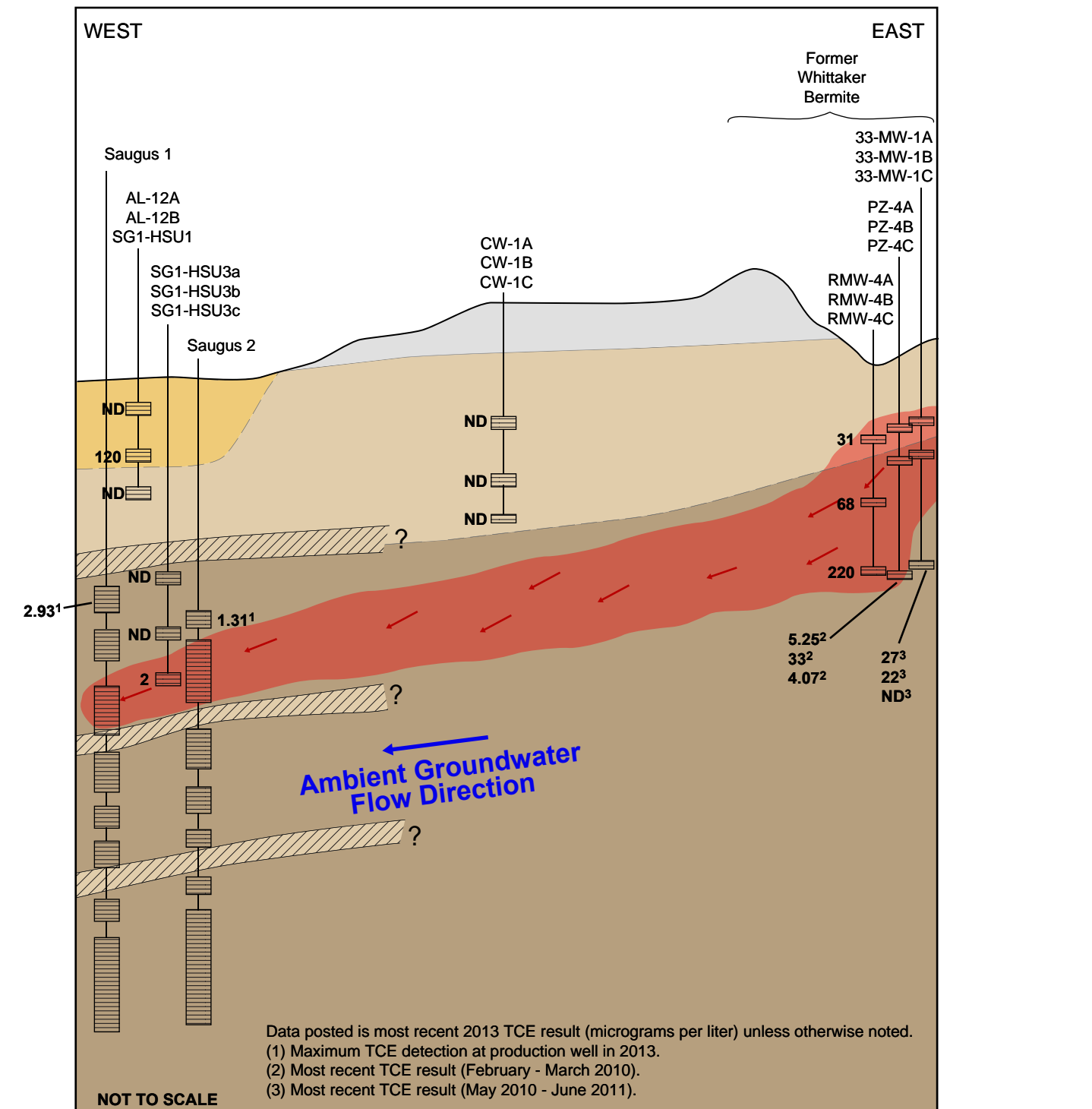


#### LEGEND

| TCE Concentrations (µg/L) |                         | Production Well, Alluvium | Former Whittaker Bermite Site                    |
|---------------------------|-------------------------|---------------------------|--|
| ●                         | 2013 Data Not Available | ✕                         | Alluvium (Destroyed)                             |
| ○                         | ND                      | ●                         | Production Well, Saugus                          |
| ●                         | ND to MCL               | ✕                         | Saugus (Destroyed)                               |
| ●                         | MCL to 10xMCL           | ---                       | Fault Approximate                                |
| ●                         | 10xMCL to 100xMCL       | ●                         | Fault Concealed                                  |
| ●                         | >100xMCL                | ■                         | Saugus Industrial Center                         |
|                           |                         | □                         | Whittaker Bermite VOC Impacted Area <sup>1</sup> |
|                           |                         | □                         | Alluvium Extent                                  |
|                           |                         | □                         | Conceptual Cross-Section                         |
|                           |                         | ●                         | Vertical Migration, Saugus                       |
|                           |                         | →                         | Lateral Transport in Saugus                      |

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- Notes:  
1. Source: CDM Smith, 2013  
2. TCE = trichloroethene  
3. VOC = volatile organic compound



|                     |                              |                                 |
|---------------------|------------------------------|---------------------------------|
| Quaternary Alluvium | Saugus B                     | Saugus Formation (fine-grained) |
| Saugus A            | Conceptualized VOC Migration | Terrace Deposits                |

FIGURE 5-5  
Whittaker Bermite - Conceptual Saugus Formation  
VOC Migration Pathways  
Saugus Formation VOC Investigation  
Santa Clarita, California



**PROOF OF SERVICE**

The undersigned declares:

I am employed in the County of Los Angeles, State of California. I am over the age of 18 and am not a party to the within action; my business address is c/o Nossaman LLP, 777 South Figueroa Street, 34th Floor, Los Angeles, CA 90017.

On September 4, 2020, I served **EXPERT REBUTTAL REPORT OF MARK TRUDELL** on parties to the within action as follows:

**SEE ATTACHED SERVICE LIST**

- ☐ (By U.S. Mail) On the same date, at my said place of business, Copy enclosed in a sealed envelope, addressed as shown on the attached service list was placed for collection and mailing following the usual business practice of my said employer. I am readily familiar with my said employer's business practice for collection and processing of correspondence for mailing with the United States Postal Service, and, pursuant to that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid, on the same date at Los Angeles, California.
- ☐ (By Overnight Service) I served a true and correct copy by overnight delivery service for delivery on the next business day. Each copy was enclosed in an envelope or package designated by the express service carrier; deposited in a facility regularly maintained by the express service carrier or delivered to a courier or driver authorized to receive documents on its behalf; with delivery fees paid or provided for; addressed as shown on the accompanying service list.
- ☒ (By Electronic Service) By emailing true and correct copies to the persons at the electronic notification address(es) shown on the accompanying service list. The document(s) was/were served electronically and the transmission was reported as complete and without error.
- ☒ (FEDERAL) I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on September 4, 2020, at Los Angeles, California.



Tara E. Paul

**SERVICE LIST**

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## **EXHIBIT I**



***Santa Clarita Valley  
Water Agency v.  
Whittaker Corporation***

**Expert Rebuttal Report  
Duane L. Steffey, Ph.D.**

***Santa Clarita Valley Water Agency  
v. Whittaker Corporation***

**Expert Rebuttal Report  
Duane L. Steffey, Ph.D.**

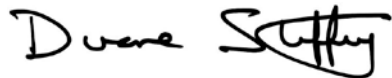
**United States District Court  
Central District of California**

**Case No. 2:18-CV-6825-GW**

Prepared for

Fred M. Blum, Esq.  
Bassi Edlin Huie & Blum LLP  
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Prepared by

A handwritten signature in black ink that reads "Duane Steffey". The signature is written in a cursive, slightly stylized font.

Duane Steffey, Ph.D.  
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September 4, 2020

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## Summary Opinions

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As an employee of Exponent, I was retained by Bassi Edlin Huie & Blum LLP, counsel to Whittaker Corporation, to conduct a statistical evaluation of the data analyses and associated opinions formed by plaintiff's experts, including Dr. Mark Trudell and Mr. Lynn Takaichi, retained in the case captioned *Santa Clarita Valley Water Agency (SCVWA) v. Whittaker Corporation*, which relates to adverse water quality allegedly caused by contaminants emanating from the Whittaker-Bermite site.

I have formed several summary findings and opinions pertaining to this matter:

- **Anomalous Downstream Detections of Contaminants:** Although plaintiff's experts note the detection of TCE in the Saugus 1 and 2 water supply wells, as well as at a turnout downstream of the Saugus Perchlorate Treatment Facility (SPTF), they fail to acknowledge anomalous detections of volatile organic compounds (VOCs), particularly PCE, at downstream turnouts. In many cases, the magnitude of these downstream PCE detections is greater than can plausibly be attributed to the SPTF and the Whittaker-Bermite site.
- **Unreliable Estimates of Water Ratios from Constituent Analysis:** SCVWA's method of estimating the ratio of SPTF water to imported water based on measured quantities of chloride, sulfate, or other constituents is not sufficiently reliable to assist in interpreting the recorded detections of TCE and PCE. Sometimes the SCVMA method produces negative ratio estimates that are physically impossible; other times the estimated ratios imply upstream levels of contamination that far exceed the contemporaneous measurements actually obtained from the water quality monitoring samples.

I hold these opinions with a reasonable degree of scientific certainty, based on the case materials reviewed and on my education, experience, and knowledge. This report may be supplemented or modified based on review of additional material as it becomes available through ongoing discovery and/or through any additional work or review of additional work performed by others.

## **Basis and Foundation for Opinions**

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### **Qualifications**

I am a Principal Scientist and Director of Exponent's Statistical and Data Sciences practice. In that capacity I oversee a group of statisticians, mathematicians, and computer scientists specializing in the application of quantitative methods in projects involving product development, manufacturing, regulatory and safety issues. My academic credentials include a Bachelor of Science degree and M.S. and Ph.D. degrees in statistics, all earned from Carnegie Mellon University. I am an elected Fellow of the American Statistical Association and an elected member of the International Statistical Institute. Prior to joining Exponent, I was a tenured full professor and coordinator of the Division of Statistics in the Department of Mathematics and Statistics at San Diego State University.

My recent applied work has concerned the statistical design and analysis of studies to evaluate the performance of products during development, manufacturing, and in-service use by customers. I have also applied statistical concepts and methods in evaluating issues arising from actions, events, processes, products, or services affecting relationships between businesses and consumers, employees, other companies or individuals, government agencies, and the environment. From consulting assignments as a university professor and from my work at Exponent, I have considerable experience in the analysis of observational data from environmental studies. Specifically, I have developed and implemented statistical sampling and analysis plans for monitoring of ground water quality at municipal solid waste landfills. I have authored or co-authored approximately 40 peer-reviewed publications appearing in books and journals in statistics and areas of application.

A copy of my current curriculum vita is appended to this report.

### **Background**

The subject case involves recent detections of chlorinated volatile organic compounds (VOCs), primarily trichloroethylene (TCE) and tetrachloroethylene (PCE), in the SCVWA system. These VOCs have been detected in groundwater produced by the Saugus 1 and 2 water supply wells, as well as at locations downstream of the supply wells.

Previous water quality testing in 1997 identified perchlorate in groundwater being extracted from the Saugus 1 and 2 water supply wells and other nearby municipal water supply wells. The perchlorate in these wells was determined to have originated from a former military munitions facility proximate to the contaminated wells. This facility, the Whittaker-Bermite site (the "Whittaker site"), had a 50-year history of manufacturing and testing explosives, munitions, and various other products associated with perchlorate. After construction of the Saugus Perchlorate Treatment Facility (SPTF) to treat perchlorate-affected groundwater, the two supply wells were returned to service in 2010.

Issues of contention in the present matter pertain to whether the recent detections of VOCs at various monitoring points in the SCVWA system should be attributed, in whole or in part, to the Whittaker site.

## **Anomalous Downstream Detections of Constituents**

Only one paragraph of Dr. Trudell's report<sup>1</sup> addresses recent VOC detections in water quality monitoring of the SCVWA system:

“[R]ecently, detections of chlorinated volatile organic compounds (VOCs), primarily trichloroethene [sic] (TCE) and tetrachloroethene [sic] (PCE) in the SPTF influent have caused concern with the California State Water Resources Control Board, Division of Drinking Water (DDW), which oversees the distribution of the treated groundwater as a source of drinking water. TCE has been detected in groundwater produced by the [Saugus 1 and 2] water supply wells at a maximum concentration of 4.2 micrograms per liter (µg/L), and at a turnout downstream of the SPTF at concentrations ranging from 0.5 µg/L to 1.0 µg/L.”<sup>2</sup>

Dr. Trudell does not cite corresponding test results for PCE, nor does he indicate whether the upstream and downstream TCE concentrations were contemporaneous measurements. His report includes no explicit statement attributing the downstream VOC detections to the Whittaker site, but its description of TCE detections suggests that interpretation.

However, the historical water quality monitoring data collected from the SCVWA system between 2011 and 2019 contain many anomalous results that call into question whether VOC detections downstream of the Saugus 1 and 2 wells and the SPTF effluent can be reliably attributed, either in whole or in part, to migration of contaminants from the Whittaker site. Records for this period show that measured TCE values at four of five turnouts occasionally met or actually exceeded the contemporaneous value measured at the SPTF effluent (Figure 1). Many more of the turnout detections are at concentrations greater than half of the concentration measured at the SPTF effluent.<sup>3</sup> Such findings are not consistent with operations in which relatively small volumes of Saugus water are mixed with larger volumes of imported water from Castaic Lake, and they could indicate the presence of TCE sources other than the Whittaker site.

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<sup>1</sup> Although this section references Dr. Trudell's report, my opinions in this section and the subsequent section apply equally to any other expert holding similar opinions.

<sup>2</sup> Trudell Report, p. 2.

<sup>3</sup> For presentation in Figures 1 and 2, non-detections (“NDs”) at the SPTF effluent are set equal to the detection limit of 0.5 µg/L.

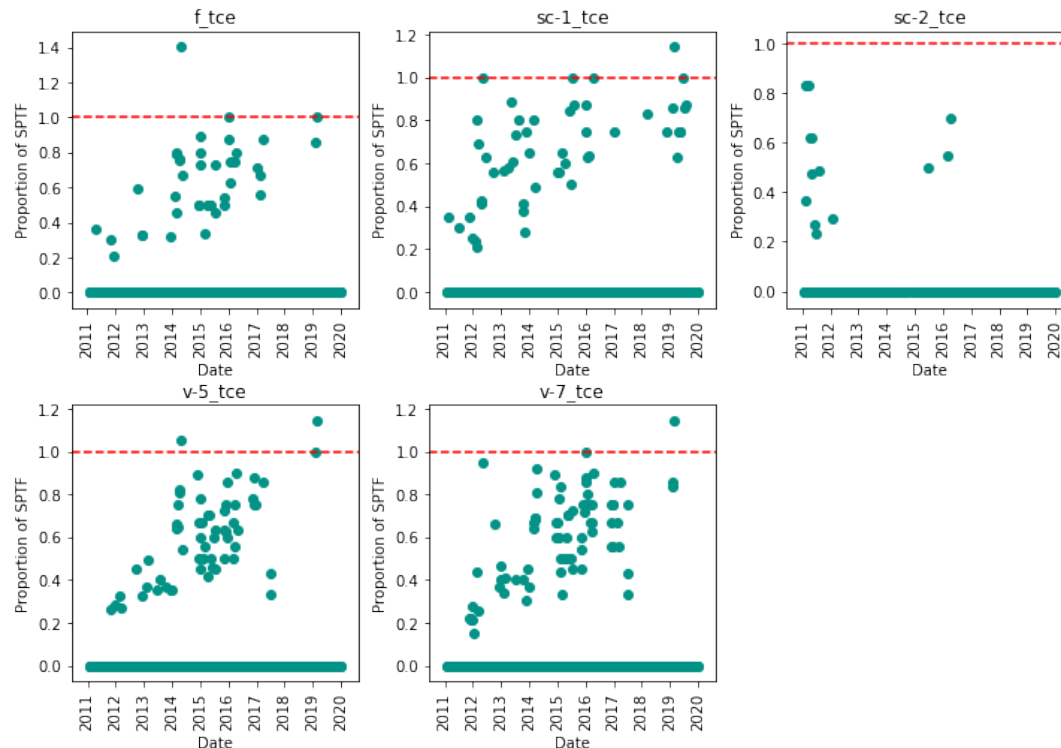


Figure 1. Ratio of contemporaneous TCE measurements at turnout and SPTF effluent.

Anomalies of even greater magnitude can be found in the historical monitoring data for PCE. At all five turnouts, measured PCE values occasionally met or exceeded the contemporaneous value measured at the SPTF effluent (Figure 2). At two of the turnouts, the downstream PCE values were sometimes dramatically higher: measured PCE concentrations at SC-1 were more than 20 times greater in 2012 and five times greater in 2015 than contemporaneous measurements at the SPTF effluent; measured PCE concentrations at SC-2 were six times greater in 2011 and more than three times greater in 2014 than contemporaneous measurements at the SPTF effluent. Dr. Trudell's report omits mention of these data, which provide no scientific basis for concluding that the large PCE concentrations detected at downstream turnouts during 2011-2019 were transported from the Whittaker site.

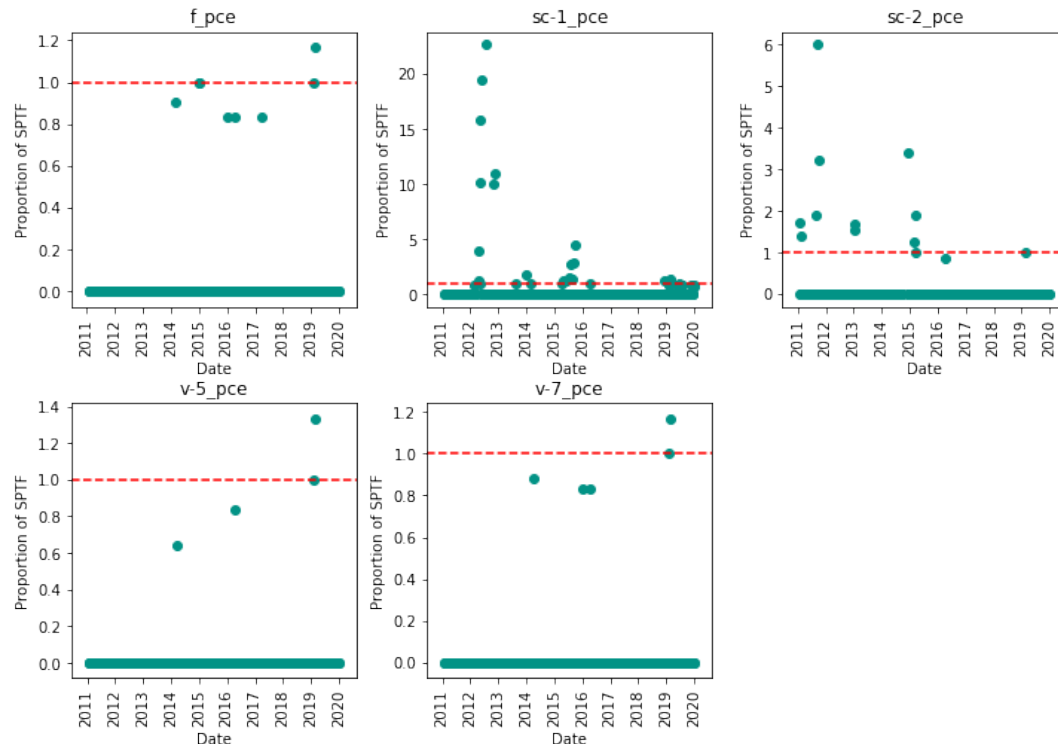


Figure 2. Ratio of contemporaneous PCE measurements at turnout and SPTF effluent.

## Unreliable Estimates of Water Ratios from Constituent Analysis

Since April 2013 SCVWA personnel have conducted blending studies to estimate the percent of water from SPTF effluent ( $P_s$ ) at each of five downstream turnouts.<sup>4</sup> Estimates are based on one of three monitored constituents (EC, chloride, and sulfate) and derived from the general formula:

$$P_s = \frac{X_t - X_p}{X_s - X_p},$$

where  $X_t$ ,  $X_s$ , and  $X_p$ , respectively, denote the measured concentration of the monitored constituent at the turnout, the SPTF effluent, and the surface plant water drawn from Castaic Lake. Because EC levels differ in the effluents of the two surface plants (Rio Vista and Earl Schmidt), SCVWA personnel have preferred to use either chloride or sulfate in estimating the water ratio—i.e., the percent of water at the turnout drawn from SPTF effluent.<sup>5</sup> Note that this methodology presumes only two sources of monitored constituents upstream of the turnouts. The existence of additional upstream sources would call into question the validity of the SCVWA approach.

<sup>4</sup> Document SCVWA-0043929.

<sup>5</sup> *Ibid.*

Examination of the estimated water ratios from the blending studies during 2013-2019 reveals two problematic characteristics that compromise their reliability as a basis for drawing conclusions about the source of downstream VOC detections in the SCVWA system. First, the estimating equation given above can produce negative estimates (Figures 3 and 4) that are not physically meaningful, particularly for certain turnouts and monitored constituents—e.g., using chloride to estimate the water ratio for turnout F.

Second, the detected VOC concentrations at the turnouts frequently exceed the expected concentrations calculated by multiplying the concentrations measured contemporaneously at the SPTF effluent by the estimated water ratio (Figures 5 through 8). For example, regardless of whether chloride or sulfate is used to estimate the water ratio at turnout V-7, the actual measured concentration of TCE at V-7 can be more than four times greater than the estimated expected concentration. Results for PCE are even more incongruous: on December 8, 2014 PCE was not detected at the SPTF effluent, but a reading of 1.7 was obtained at SC-2 from a sample estimated to be only 1.85% Saugus water. For these results to be internally consistent would require PCE to have been detected at the SPTF effluent at a level of 91.9—more than 90 times greater than the maximum PCE level of 1.0 found there during monitoring from 2010-2019. Also, the vertical lines in Figures 5 through 8 indicate VOC detections at turnouts when the estimated percentage of Saugus water is zero or negative.

These findings are consistent with two interpretations: either the water ratios are unreliable estimates of the percent Saugus water at turnouts, or the negative estimates can be disregarded but the positive ones trusted—in which case, the excess concentrations of VOCs measured at the turnouts suggest that TCE sources other than the Whittaker site are affecting water quality in the SCVWA system.



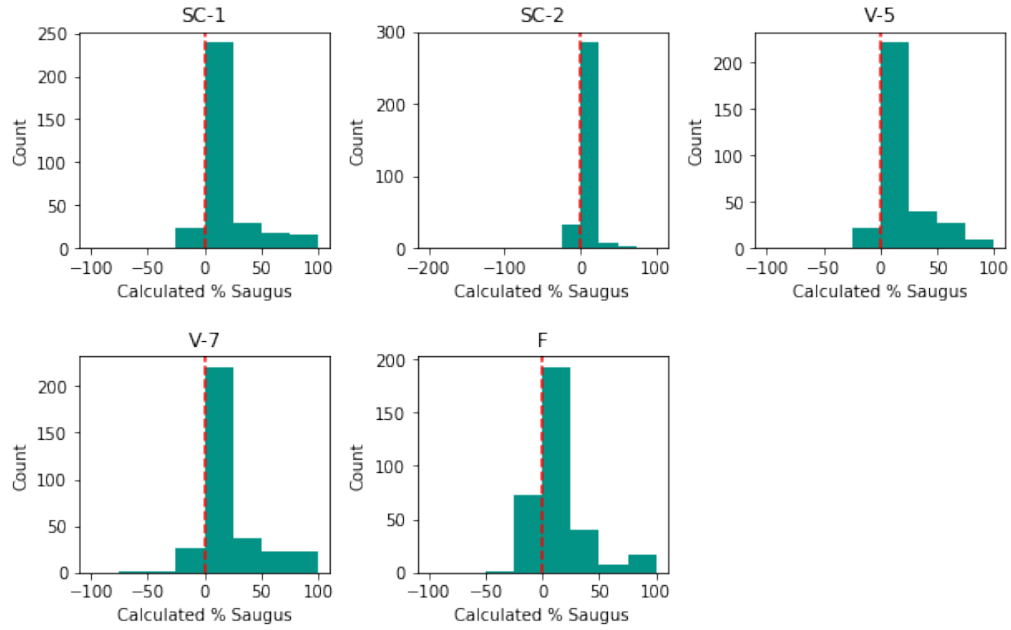


Figure 3. Estimated percentage of Saugus water at turnout locations based on chloride.

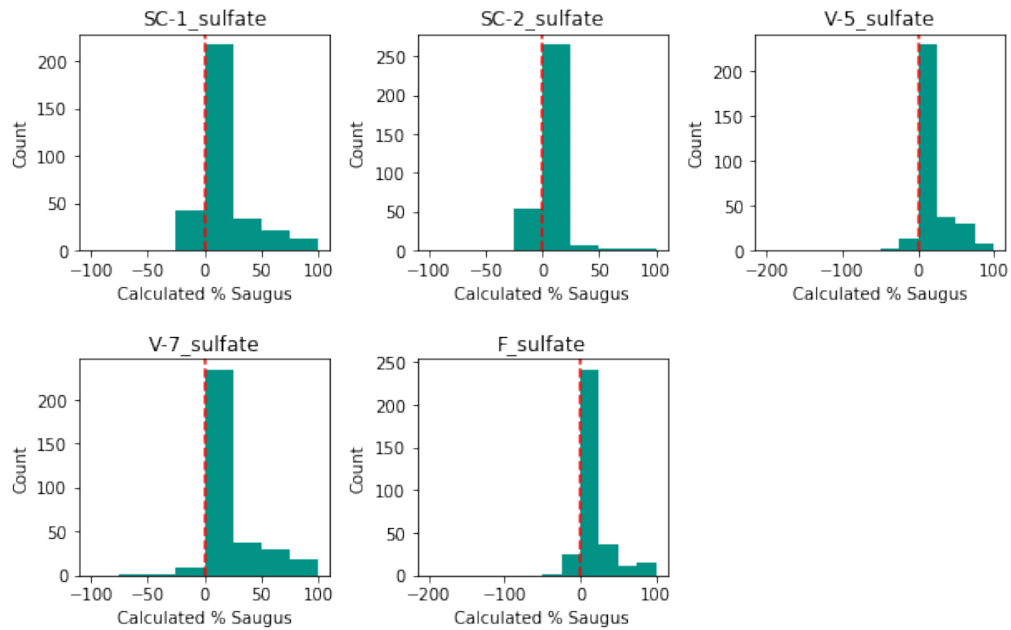


Figure 4. Estimated percentage of Saugus water at turnout locations based on sulfate.

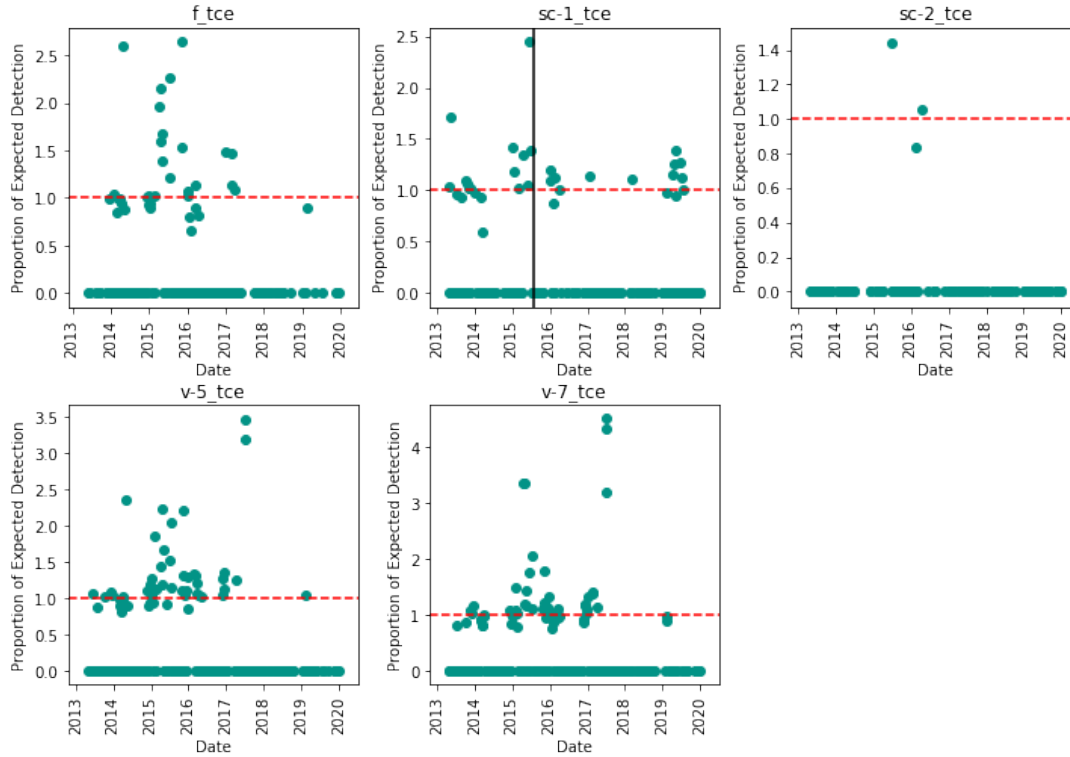


Figure 5. Ratio of actual to expected TCE value, estimated from SPTF value and chloride ratio.

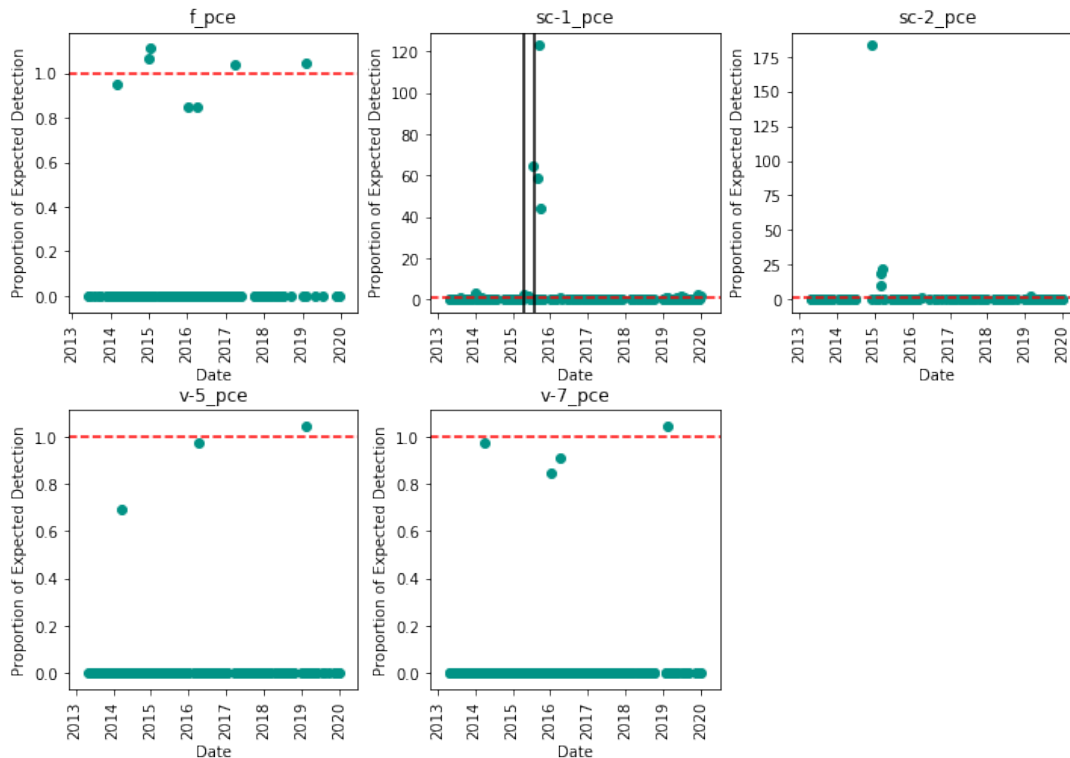


Figure 6. Ratio of actual to expected PCE value, estimated from SPTF value and chloride ratio.

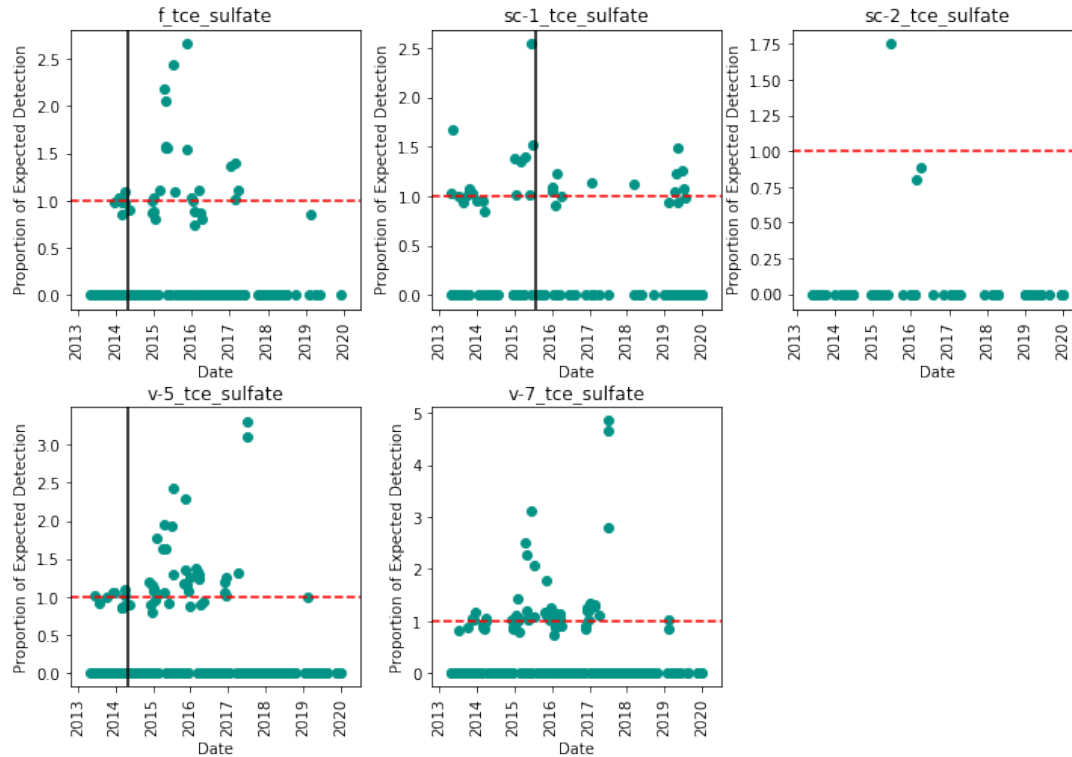


Figure 7. Ratio of actual to expected TCE value, estimated from SPTF value and sulfate ratio.

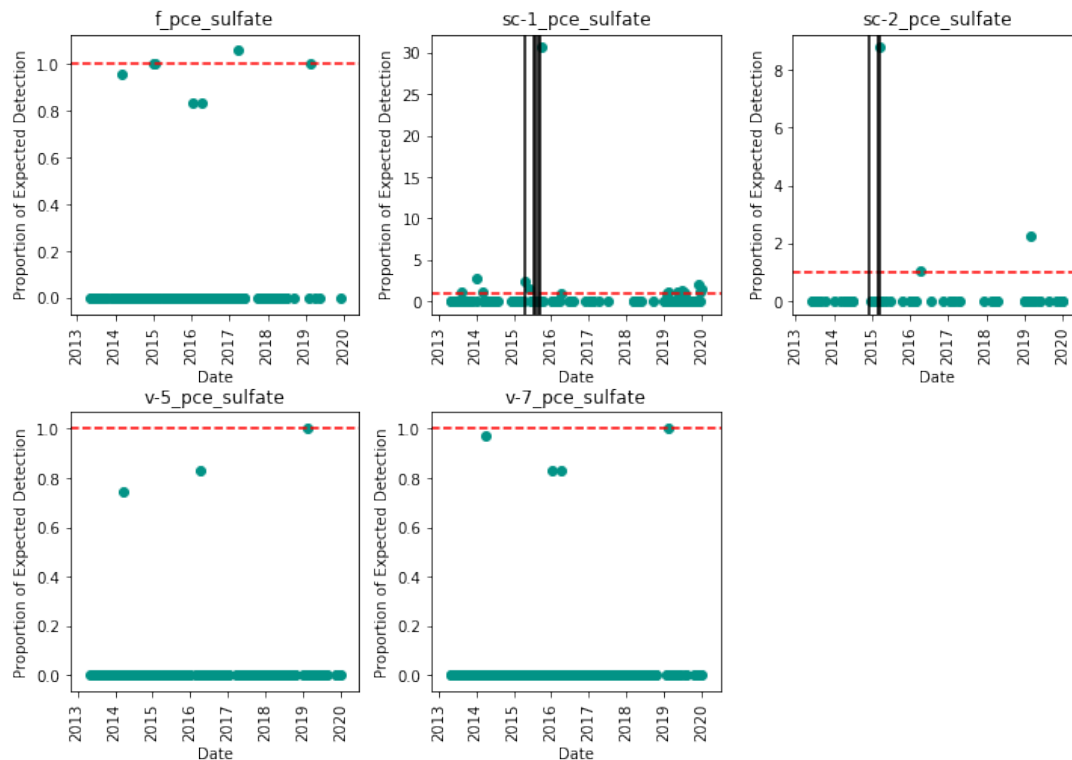


Figure 8. Ratio of actual to expected PCE value, estimated from SPTF value and sulfate ratio.

## **Data and Information Considered**

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### Expert Reports

- Mark Trudell, August 2020
- Lynn Takaichi, August 14, 2020

### Documents Produced by SCVWA

- Various, Bates numbers between SCVWA-0002751 and SCVWA-0681496

## Curriculum Vitae and Publications

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**Duane L. Steffey, Ph.D.**

**Principal Scientist and Practice Director**

### Professional Profile

Dr. Duane L. Steffey is a Principal Scientist and Practice Director for Exponent's Statistical and Data Sciences practice. Dr. Steffey's experience as a consulting statistician spans more than 25 years and a breadth of applications in engineering, health, environmental science, and civil justice. His expertise includes the statistical design and analysis of studies to evaluate the performance of products during development, manufacturing, and in-service use by customers. He has evaluated issues related to construction materials (concrete, doors, windows), consumer electronics (computers, phones), drug delivery systems (syringes, transdermal patches), home appliances (dishwashers, refrigerators), industrial tools, medical devices (joint implants, stents), motor vehicles, pharmaceuticals, recreational and sports equipment. His investigations have involved data from engineering and scientific experiments, sample surveys, observational studies, and a variety of administrative record sources: accident and injury databases, complaints, field returns, quality audits, replacement part sales, warranty claims. Dr. Steffey has also applied statistical concepts and methods in evaluating issues arising from actions, events, processes, products, or services affecting relationships between businesses and consumers, employees, other companies or individuals, government agencies, and the environment (including contracts, patents, and regulations).

As a tenured professor of statistics at San Diego State University, Dr. Steffey co-founded and co-directed the university's statistical consulting center. He held a prior appointment at the National Research Council, where he directed studies for federal government clients on census methodology and the testing and evaluation of military systems. He was also previously employed in the risk assessment group at Westinghouse Electric Corporation, where he was engaged in conducting probabilistic safety studies for the commercial nuclear energy industry. Dr. Steffey is an elected Fellow of the American Statistical Association.

### Academic Credentials and Professional Honors

Ph.D., Statistics, Carnegie Mellon University, 1988

M.S., Statistics, Carnegie Mellon University, 1984

B.S., History/Mathematics, Carnegie Mellon University (with honors), 1981

Elected Member, International Statistical Institute, 2015; Fellow, American Statistical Association, 2009; Travel Award for Topic Contributed Session, Section on Statistical Consulting, American Statistical Association, 2008; Chapter Service Recognition Award, American Statistical Association, 2005; Staff Award, Commission on Behavioral and Social Sciences and Education, National Research Council, 1995; Nominee, Timeos Award for

University Teaching, San Diego State University, 1990; Summer Faculty Research Fellowship, San Diego State University, 1990; National Merit Scholarship, Carnegie Mellon University, 1977–1981

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Steffey D, Watson H. Statistical assessment of injury diagnosis and causation. 8<sup>th</sup> International Conference on Forensic Statistics, Seattle, WA, July 21, 2011.

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Steffey D. Expanding the role of statistical science in defense and national security. Joint Statistical Meetings, Washington, DC, August 2–6, 2009.

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Steffey D. Overarching issues in risk analysis. Joint Statistical Meetings, Salt Lake City, UT, July 29–August 2, 2007.

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Steffey DL, Fienberg SE, Sturges RH. Statistical assessment of damages in breach of contract litigation. 6<sup>th</sup> International Conference on Forensic Statistics, Tempe, AZ, March 18, 2005.

Steffey D, Kelly C. Statistical consulting at SDSU: Meeting the needs of students and clients. 5<sup>th</sup> Annual Workshop on Statistical Consulting and Collaboration, Claremont, CA, November 15, 2003.

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Shcherbak OV, Steffey D. Predictive modeling of bank portfolio data on home equity products. Joint Statistical Meetings, San Francisco, CA, August 3, 2003.

Steffey D. Hierarchical space-time models in environmental and ecological applications. 4<sup>th</sup> Annual Environmental Science Conference, CEA-CREST, Pasadena, CA, May 30–31, 2003.

Steffey D, Kazimi C, Supernak J, Kaschade C. assessing air quality along San Diego's I-15 traffic corridor: Statistical methods for uncertainty analysis. Joint Statistical Meetings, New York, NY, August 15, 2002.

Steffey D. Design, measurement, and analysis of traffic studies: recent issues and reflections from the I-15 congestion pricing project. 80<sup>th</sup> Annual Meeting, Transportation Research Board, Washington, DC, January 10, 2001.

Steffey DL, Samaniego FJ, Tran H. Hierarchical Bayesian inference in related reliability experiments. 2<sup>nd</sup> International Conference on Mathematical Methods in Reliability, Bordeaux, France, July 6, 2000.

Steffey D. Statistics, testing, and defense acquisition. ITEA International Symposium, Albuquerque, NM, September 23, 1998.

Steffey D. Counting people in the information age. Council of Professional Associations on Federal Statistics, Washington, DC, December 1994.

### **Prior Experience**

- Professor, Department of Mathematics and Statistics, San Diego State University, 2003–2006
- Associate Professor, Department of Mathematics and Statistics, San Diego State University, 1993–2003
- Instructor and Visiting Scholar, Division of Statistics, University of California, Davis, Summer/Fall 1998
- Study Director, Committee on National Statistics, National Research Council, 1992–1995
- Adjunct Assistant Professor, Graduate School of Public Health, 1989–1992
- Assistant Professor, Department of Mathematical Sciences, San Diego State University, 1988–1993
- Associate Scientist, Probabilistic Risk Assessment Group, Westinghouse Electric Corporation, 1981–1983

### **Project Experience**

#### *Construction*

Highway: Investigated a claim involving an asphalt contractor and a state department of transportation. Found that sampling of constructed highway was inadequate to judge compliance with contract specifications.

Residential: Analyzed data collected from inspected and tested homes in a large community. Found that inspected homes with visual evidence of distress were overrepresented in the sample of homes selected for subsequent destructive testing, leading to overstatement of the prevalence of construction defects in the community.



### *Consumer*

Marketing Research: Developed methodology to quantify uncertainty in client's proprietary metrics for estimating effectiveness of different marketing campaigns for various products.

Telecommunication Services: Analyzed company's prices and packages, as well as customer data to characterize distribution of services purchased and assess variation in billing practices.

### *Employment*

Meals and Breaks: Evaluated survey research methods used in estimating economic value of meal and break periods for a class of employees. Found that estimates were affected by numerous sources of bias in sample selection, population coverage, and survey non-response, as well as sources of error in responses to individual questionnaire items.

Wage and Hour: Designed, implemented, and analyzed a sample of employee time records to estimate variation of actual hours from budgeted hours for the purpose of assessing eligibility for overtime compensation.

### *Insurance*

Motor Vehicle: Analyzed labor rate survey data to evaluate company's practices for reimbursement of claimed repair costs.

Worker's Compensation: Designed, implemented, and analyzed results from a sample audit of claims to estimate total economic damages in claim population.

### *Product Development*

Medical Diagnostics: Analyzed client's biomarker data to assist in developing effective rules for distinguishing different medical conditions presenting similar clinical symptoms.

Qualification Testing: Designed and analyzed results from accelerated tests to characterize stress-life relationship and estimate performance of client product under in use conditions.

### *Product Manufacturing*

Acceptance Sampling: Evaluated historical quality control records to assess degree of compliance with best statistical practices for inspection of finished goods in factory operations.

Troubleshooting Analyses of Production Data: Analyzed output data on manufactured lots, input data on raw materials, and intermediate data on process characteristics to identify factors associated with unacceptable variation in end-of-line outcomes.

### *Product Reliability and Safety*

Recall Investigations: Analyzed field data on incidents and at-risk units to estimate level of and trends in product performance. Identified specific models, production time periods, and manufacturing locations with significantly different end-customer experience.

Comparative Risk Analysis: Evaluated in-use performance of manufacturer-specific products relative to in-use performance of industry products.

### **Peer Reviewer**

National Research Council, National Science Foundation, Journal of the American Statistical Association, The American Statistician, Statistical Science, Biometrics, Risk Analysis, Transportation Research Record, Journal of the Air and Waste Management Association, IIE Transactions on Quality and Reliability Engineering, Journal of Official Statistics, Communications in Statistics—Theory and Methods, Technometrics, Journal of Business and Economic Statistics, Annals of the Institute of Statistical Mathematics

### **Professional Affiliations**

- American Statistical Association (Fellow)
- International Statistical Institute (Elected Member)
- Institute of Mathematical Statistics (Member)
- Society for Risk Analysis (Member)
- ASA Committee on Professional Ethics (2013–present)
- Nominations Committee Member, ASA Section on Statistics in Defense and National Security (2015-present)
- Editorial Board, CHANCE Magazine (2006–2013)
- ASA Working Group on Visibility and Impact in Policy Making (2010)
- Program Chair, ASA Section on Risk Analysis (2006–2007)
- ASA Council of Chapters Governing Board: Vice-Chair, District 6 (2008–2010), Nominations Committee Member (2001–2003)
- President, San Diego Chapter, American Statistical Association (1999–2003)

## **List of Previous Testimony, 2016-2020**

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Mitsuoka v. Haseko Homes, Dispute Prevention & Resolution, Case No. 17-0447-A, Testimony in deposition re: statistical evaluation of plaintiffs' assessment of construction defects. July 10, 2020. Retained by counsel for defendant.

In Re: Pacific Fertility Center Litigation, United States District Court, Northern District of California, San Francisco Division, Case No. 3:18-cv-01586-JSC, Testimony in deposition re: plaintiffs' statistical assessment of adverse outcomes allegedly caused by deviation from normal operating conditions. January 20, 2020. Retained by counsel for defendant.

Esparza Enterprises, Inc. v. Acclamation Insurance Management Services, et al., American Arbitration Association, Case No. 01-17-0003-2101, Testimony in deposition re: statistical sampling of workers compensation claims and estimation of financial impact from handling errors. October 22, 2019. Retained by counsel for claimant.

Charles and Kathleen Bohannon v. Intuitive Surgical, Inc., United States District Court, Northern District of California, Case No. 5:18-CV-02186, Testimony in deposition re: statistical evaluation of plaintiffs' expert opinions regarding monitoring of product during customer use. September 4, 2019. Retained by counsel for defendant.

Latitude 33 Beach Collection Association v. Standard Pacific Corp., JAMS Reference No. 1220056560, Testimony in deposition re: statistical evaluation of claimants' assessment of construction defects and repair costs. October 30, 2018. Retained by counsel for respondent.

Michael Reichard, et al. v. Turquoise Trail, LLC, et al., First Judicial District, State of New Mexico, County of Santa Fe, Case No. D-101-CV-2016-01736, Testimony in deposition re: statistical evaluation of plaintiffs' assessment of construction defects and repair costs. October 22, 2018. Retained by counsel for defendant.

John Pupuhi Baker, Jr., et al., v. Castle & Cooke Homes Hawaii, Inc., et al., State of Hawaii, DPR No. 15-0127-A, Testimony in deposition re: statistical analysis of field performance data and assessment of plaintiffs' investigation. October 2, 2018. Retained by counsel for defendant.

Betty Harkey, et al. v. General Electric Company, United States District Court, District of Connecticut, Case No. 3:13-cv-01799, Testimony in deposition re: statistical analysis of field performance data. March 28, 2018. Retained by counsel for defendant.

Centria Homeowners Association v. Western Pacific Housing, Inc., et al., Superior Court, State of California, County of Santa Clara, Case No. 16CV289945, Testimony in deposition re: statistical evaluation of plaintiffs' assessment of construction defects and repair costs. March 16, 2018. Retained by counsel for defendant.

Orland Eugene Sylve v. Ford Motor Company, et al., Superior Court, State of California, County of San Bernardino, Case No. CIVDS1505731, Testimony in deposition re: statistical evaluation of motor vehicle crash foreseeability. December 28, 2017. Retained by counsel for defendant.

Butte Fire Cases, Superior Court, State of California, County of Sacramento, Case No. JCCP 4853, Testimony in deposition re: statistical assessment of quality assurance audit. July 27, 2017. Retained by counsel for defendant.

Thorpe Design, Inc. v. The Viking Corporation, et al., United States District Court, Northern District of California, Case No. 3:15-cv-03324, Testimony in deposition re: statistical analysis of field performance data. June 13, 2017. Retained by counsel for defendant.

Fire Sprinkler Systems, Inc. v. The Viking Corporation, et al., Superior Court, State of California, County of Riverside, Case No. RIC1504932, Testimony in deposition re: statistical analysis of field performance data. June 13, 2017. Retained by counsel for defendant.

Wilshire Vermont Housing Partners L.P. v. Taisei Construction Corporation, et al., Superior Court, State of California, County of Los Angeles, Case No. BC504178, Testimony in deposition re: statistical evaluation of plaintiff's assessment of construction defects. May 18, 2017. Retained by counsel for plaintiff.

Bahamas Surgery Center LLC v. Kimberly-Clark Corporation, et al., United States District Court, Central District of California, Case No. 2:14-cv-08390, Testimony in trial re: statistical evaluation of surgical gown testing and compliance with applicable standard. April 5, 2017. Retained by counsel for defendant.

Travelers Indemnity Company v. Adir International, LLC, NAM Case No. 190189, Testimony in deposition and arbitration re: statistical sampling of workers compensation claims and estimation of financial impact from handling errors. December 20, 2016 and January 28, 2017. Retained by counsel for respondent.

Nelson Araujo, et al., v. City of San Jacinto, et al., Superior Court, State of California, County of Riverside, Case No. RIC1411590, Testimony in deposition re: statistical evaluation of motor vehicle crash foreseeability and comparative assessment of collision rates. November 17, 2016. Retained by counsel for defendant.

One Queensridge Place Homeowners Association, Inc. v. Perini Building Company, et al., District Court, State of Nevada, County of Clark, Case No. A-12-661825-D, Testimony in deposition re: statistical evaluation of plaintiffs' assessment of construction defects and repair costs. October 31, 2016. Retained by counsel for defendant.

Chicago Hotel Holdings, Inc. v. Leopardo Companies, Inc., et al., Circuit Court, State of Illinois, County of Cook, Case No. 13-L-9579, Testimony in deposition re: statistical evaluation of

plaintiffs' assessment of construction defects and repair costs. September 16, 2016. Retained by counsel for cross-defendant.

Copper Gate Homeowners Association v. Western Pacific Housing, Inc., et al., Superior Court, State of California, County of Contra Costa, Case No. C14-02233, Testimony in deposition and arbitration re: statistical evaluation of plaintiffs' assessment of construction defects and repair costs. August 26, 2016 and November 11, 2016. Retained by counsel for defendant.

## **Compensation**

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Exponent is being compensated at the rate of \$450 per hour for my work related to this matter.  
No part of my compensation is contingent upon the outcome of this matter.



**EXHIBIT J**

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

SANTA CLARITA VALLEY WATER )  
AGENCY, ) No. 2:18-CV-6825-  
Plaintiff, ) GW(RAOx)  
VS. )  
WHITTAKER CORPORATION, et al.)  
Defendant. )  
\_\_\_\_\_)  
AND RELATED CROSS-ACTION. )  
\_\_\_\_\_)

VIDEOTAPED ZOOM/TELEPHONIC DEPOSITION OF:

GARY HOKKANEN

TUESDAY, SEPTEMBER 29, 2020

9:38 A.M.

Reported by: LINDA NICKERSON

CSR No. 8746

Job No. 4266459

Pages 1-329

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1 same migration pathway as it would be for 3c? 01:31:08

2 A There could be some differences, and it 01:31:13

3 looks like based on the data, there are some 01:31:15

4 differences. 01:31:18

5 MR. GEE: Mr. Hokkanen, when it comes up, 01:31:48

6 can you take a look at Exhibit 316. 01:31:50

7 THE WITNESS: All right. 01:32:15

8 (The document referred to was marked by the

9 Reporter as Deposition Exhibit 316 for

10 identification and is attached hereto.)

11 BY MR. GEE: 01:32:15

12 Q Okay. Let's see. For the record, 316 is 01:32:15

13 an AECOM-generated figure for Whittaker Corporation, 01:32:31

14 and it's labeled "Potentiometric Surface Map, Saugus 01:32:42

15 Formation HSU" -- I think it says S-3c; is that -- 01:32:49

16 is that right, Mr. Hokkanen? My vision is not -- 01:32:55

17 A That's what I read also, yeah, 3c. 01:32:58

18 Q Okay. And looking at this drawing, do you 01:33:05

19 see the blue arrows? 01:33:08

20 A Yes. 01:33:11

21 Q And what -- according to the legend, the 01:33:12

22 blue arrows indicate that it is the approximate 01:33:19

23 direction of groundwater flow. 01:33:26

24 Did I read that right? 01:33:28

25 A That's generally what those arrows mean, 01:33:29

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1 yes. 01:33:35

2 Q Don't the arrows in HSU-3 appear to be 01:33:35

3 moving to the west southwest -- towards the west 01:33:48

4 southwest direction from the Whittaker-Bermite site? 01:33:54

5 A In May of 2019, based on these water 01:34:02

6 levels, that's what it indicates, yes. 01:34:05

7 Q Okay. And is this consistent with the 01:34:07

8 groundwater flow direction that you have in your 01:34:15

9 opinion? 01:34:15

10 A Which specific groundwater flow direction 01:34:25

11 in my opinion are you referring to, sir? 01:34:28

12 Q I believe that in your opinion, you had 01:34:30

13 groundwater flow directions that moved from OU-3 and 01:34:32

14 OU-4 toward the west three monitoring wells on the 01:34:36

15 west side of OU-4? 01:34:43

16 A I said -- yes, I indicated that over a 01:34:51

17 period of time, that groundwater flows in a west to 01:34:56

18 northwest direction from the Whittaker site, yes. 01:35:02

19 Q Okay. And I think there are some 01:35:08

20 groundwater maps. I think it was for HSU -- HSU-3a 01:35:10

21 that flow in a north -- northwest direction. We'll 01:35:15

22 get to that in -- in a couple minutes. 01:35:21

23 But this depiction seems to suggest that it 01:35:28

24 flows off the Whittaker-Bermite site, at least in 01:35:31

25 this hydrostatic unit, easy for me to say, in a west 01:35:33

1 southwest direction. 01:35:43

2 Did you look at this map in -- or did you 01:35:50

3 consider this map in forming your conclusion? 01:35:52

4 A To a certain extent, yes. 01:35:54

5 Q And what analysis did you do on this map to 01:36:07

6 determine whether or not it's an accurate depiction 01:36:09

7 of groundwater flow on page HSU-3c? 01:36:12

8 A Well, having looked at the water levels 01:36:21

9 indicated on this map and in my analysis of what I 01:36:23

10 was asked to look at, which was where TCE and PCE, 01:36:29

11 VOCs are migrating, I also looked at the water 01:36:35

12 quality data in this area. 01:36:38

13 Q Okay. Now, taking a look at where the 01:36:42

14 nearest arrow is to the Whittaker-Bermite site which 01:36:47

15 is -- if you characterize the Whittaker-Bermite site 01:36:50

16 as the horse head, it's like right around the mouth 01:36:57

17 of the horse -- horse head. 01:37:01

18 A Yes. 01:37:03

19 Q Are there any -- are there any monitoring 01:37:03

20 wells off-site in that location? 01:37:05

21 A You need to go down to the wells that are 01:37:11

22 closer to NC-11, NC-13. 01:37:14

23 Q Okay. Like is it -- is it a -- if you take 01:37:19

24 a look at the two arrows, you'll see one heading in 01:37:32

25 the west southwest direction and then further away 01:37:35



1 toward -- toward the cluster of wells, you see a 01:37:39

2 groundwater flow direction that heads, it looks 01:37:45

3 like, west -- west northwest. 01:37:50

4 Is it possible that the groundwater flow 01:37:56

5 direction may actually take a turn closer to the 01:37:59

6 Santa Clara River area? 01:38:04

7 MR. HAGSTROM: Excuse me. Excuse me. That 01:38:10

8 calls for speculation. 01:38:11

9 THE WITNESS: I mean the groundwater, I'm 01:38:15

10 not quite sure what you mean by the term "take a 01:38:19

11 turn." What this shows based on water levels, 01:38:21

12 someone has drawn these lines in to indicate in 01:38:27

13 certain areas what direction the groundwater is 01:38:31

14 flowing based on those water levels. 01:38:34

15 BY MR. GEE: 01:38:36

16 Q And you're basing your analysis on -- I 01:38:36

17 think this -- you have to pardon me. I have to zoom 01:38:40

18 in because my eyesight is not that good at all. 01:38:56

19 Are you basing your opinion on -- is that a 01:39:14

20 well called MW-OS-5c? Is that -- that's a 01:39:19

21 monitoring well, isn't it, in that vicinity? 01:39:26

22 A Your question was the monitoring wells 01:39:33

23 essentially southwest of OU-4 and, yes, OS-MW-05c is 01:39:36

24 one of them. 01:39:43

25 Q And what is the other one? 01:39:43

1           A     It's hard to see, but it's NC-13, HSU-3c.           01:39:47

2           Q     And the arrow is pointed in that general           01:39:52

3           direction, but there seems to be a large -- large           01:39:58

4           potential pathway, if you just look strictly at           01:40:03

5           elevation levels, is that correct? I mean there is           01:40:09

6           no -- it appears that the wells are quite a ways           01:40:14

7           away from the site, and groundwater may or may not           01:40:22

8           be flowing in that general direction or how did you           01:40:32

9           determine that the groundwater was flowing in toward           01:40:35

10          those wells?           01:40:37

11          MR. HAGSTROM: Objection; compound.           01:40:38

12          THE WITNESS: Mr. Gee, that was a pretty           01:40:43

13          long multiple question, but I'll try to answer to           01:40:45

14          the best of my recollection.           01:40:48

15          BY MR. GEE:           01:40:49

16          Q     Let me strike that -- let me strike the           01:40:49

17          question.           01:40:50

18          How did you determine whether the           01:40:51

19          groundwater flows toward those wells in such a           01:40:52

20          manner that they would impact those monitoring           01:40:59

21          wells?           01:41:03

22          A     I want to preface my answer this way, that           01:41:07

23          what you're showing me in this exhibit is one           01:41:11

24          snapshot in time and as I testified to earlier, with           01:41:16

25          the water level data that's been collected over the           01:41:24

1 years at and near the vicinity of the site shows 01:41:27

2 that water -- the flow directions vary. 01:41:31

3 They vary due to pumping. They vary due to 01:41:35

4 recharge, rainfall events, and so as a 01:41:38

5 hydrogeologist, I wouldn't base my analysis on one 01:41:45

6 snapshot in time. You're right. 01:41:48

7 What this -- what this snapshot in time 01:41:52

8 seems to indicate is a southwestern flow direction 01:41:55

9 in S-3c from the OU-4 area of the Bermite site. I 01:42:01

10 disagree with what you said that there appears to 01:42:08

11 be -- sorry.

12 THE REPORTER: Did you say SC? You said

13 SC -- western flow direction SC from the OU-4?

14 THE WITNESS: Yes.

15 BY MR. GEE: 01:42:22

16 Q I think you said S-3c, isn't that right, 01:42:22

17 Mr. Hokkanen? 01:42:27

18 A Yes, I did, sorry. I couldn't hear her 01:42:28

19 exactly either. 01:42:32

20 I believe part of your long question was 01:42:35

21 that you're of the opinion that there was a large 01:42:39

22 area that contaminants could migrate and then 01:42:43

23 this -- these two monitoring wells, is that your -- 01:42:48

24 I would disagree with that, sir. 01:42:51

25 Q And what else have you done that -- to -- 01:42:56

1 For example, Flamingo Cleaners has no 08:11:26  
2 releases. There is a plume of PCE moving to the 08:11:31  
3 southwest from that site. 08:11:36  
4 Le Val Cleaners operated in the late '60s. 08:11:37  
5 Based on my experience and the experience in the 08:11:40  
6 industry, there's a high likelihood that there were 08:11:43  
7 releases. Some of these other sites that you talked 08:11:47  
8 about, they would be medium -- medium or low 08:11:49  
9 category depending on what years they operated. 08:11:54  
10 The more recent years of operation, much 08:11:58  
11 lower chance of PCE use and PCE releases. The 08:12:02  
12 further back you go, the higher probability. 08:12:06  
13 Q Okay. Outside of looking at Mr. Shoup's 08:12:09  
14 expert opinion, what further investigation did you 08:12:13  
15 do on these sites? 08:12:17  
16 A Did I do on these sites? 08:12:18  
17 Q That's what I'm asking, yes. 08:12:20  
18 A I didn't do any investigation on any of 08:12:22  
19 these sites. I did look at documents related to 08:12:25  
20 Flamingo Cleaners, but no, you know, field 08:12:28  
21 investigation if that's what you're asking. 08:12:32  
22 Q So other than Mr. Shoup's expert report, is 08:12:33  
23 it correct to say that you did no further 08:12:39  
24 investigation as to the viability of the sites as 08:12:42  
25 potentially responsible parties? 08:12:46

1 A Well, I'll answer it this way. I did not 08:12:52  
2 do -- other than the review of documents for 08:12:55  
3 Flamingo Cleaners, I did not do any investigation at 08:12:59  
4 these sites, that's correct. 08:13:02  
5 Q Okay. Let's move on to your -- I may come 08:13:03  
6 back to this, but we're running out of time. So I 08:13:08  
7 do want to cover opinion number nine. 08:13:12  
8 MR. HAGSTROM: How much time -- and you can 08:13:14  
9 have this 30 seconds -- how much time is left, Court 08:13:16  
10 Reporter? 08:13:17  
11 MR. GEE: Let's go off the record to get 08:13:18  
12 the time. 08:13:19  
13 THE VIDEOGRAPHER: Four -- four minutes. 08:13:20  
14 MR. HAGSTROM: Did you say four minutes? 08:13:24  
15 THE VIDEOGRAPHER: I said four. Would you 08:13:27  
16 like to go off the record? 08:13:29  
17 MR. HAGSTROM: Yes. 08:13:30  
18 THE VIDEOGRAPHER: Okay. We're going off 08:13:31  
19 the record at 8:13. 08:13:33  
20 (Discussion held off the record.) 08:14:22  
21 THE VIDEOGRAPHER: We are back on the 08:14:27  
22 record. The time is 8:14. Please proceed. 08:14:29  
23 BY MR. GEE:  
24 Q Mr. Hokkanen, have you ever designed a 08:14:31  
25 water distribution system in your experience? 08:14:33



1 STATE OF CALIFORNIA )

2 ) ss

3 COUNTY OF ORANGE )

4 I, LINDA NICKERSON, CSR #8746, in and for  
5 the State of California do hereby certify:

6 That, prior to being examined, the witness  
7 named in the foregoing deposition was by me duly  
8 sworn to testify the truth, the whole truth, and  
9 nothing but the truth;

10 That said deposition was taken down by me in  
11 shorthand at the time and place therein named, and  
12 thereafter reduced to typewritten form at my  
13 direction, and the same is a true, correct, and  
14 complete transcript of the testimony at said  
15 proceedings.

16 Before completion of the deposition, review  
17 of transcript [X] was [ ] was not requested. If  
18 requested, any changes made by the deponent (and  
19 provided to the reporter) during the period allowed  
20 are appended hereto.

21 I further certify that I am not interested  
22 in the event of the action.

23 WITNESS MY HAND this 7th day of October, 2020.

24 

25 LINDA NICKERSON, CSR No. 8746

**EXHIBIT K**

1 UNITED STATES DISTRICT COURT  
2 CENTRAL DISTRICT OF CALIFORNIA  
3  
4

5 SANTA CLARITA VALLEY WATER )  
6 AGENCY, ) No. 2:18-CV-6825-  
7 Plaintiff, ) GW(RAOx)  
8 VS. )  
9 WHITTAKER CORPORATION, ) Pages 1-250  
10 Defendant. )  
11 ----- )  
12 AND RELATED CROSS-ACTION. )  
13 ----- )  
14  
15

16 ZOOM/TELEPHONIC DEPOSITION OF:

17 ANTHONY DAUS

18 THURSDAY, SEPTEMBER 24, 2020

19 9:38 A.M.  
20  
21  
22  
23

24 Reported by: LINDA NICKERSON

25 CSR No. 8746

Page 1

1 exactly is your -- is your primary focus -- work  
2 focus on now?

3 A My primary work focus is hydrogeology.

4 Q Okay. And so in your opinion, how do  
5 hydrogeologists go about determining groundwater  
6 flow direction?

7 A I think we use groundwater elevation data,  
8 and we may tie that into surface water elevation  
9 data, and other surface water data.

10 So they're -- they're connected. Surface  
11 water and groundwater are often connected. So we  
12 look at the -- at the -- at the body of information  
13 regarding groundwater elevation and surface water  
14 elevation.

15 Q Okay. And when you're saying surface  
16 elevation and groundwater elevation, you're talking  
17 about potential groundwater flow absent the  
18 influence of groundwater pumps?

19 A I think you have to look at those things.  
20 You have to look at anything that would influence  
21 the flow, whether it's a -- whether it's a recharge  
22 source, for example, if it's a lake or a river or a  
23 discharge point.

24 If it were also a river or a groundwater  
25 pumping well or any one of a number of things, a

1 swamp, so you have to look at the -- kind of the  
2 full picture of information and consider geologic  
3 information.

4 For example, you might have to consider  
5 faults or mountain ranges as you can imagine or  
6 different water sheds. You really want to be kind  
7 of broad in your consideration of information.

8 Q Okay. Can you determine groundwater flow  
9 direction based on two monitoring well data points?

10 A Two points, you can't get a direction. You  
11 need a third point, but if you had -- if you had --  
12 so could you repeat the question to me again,  
13 please?

14 Q Okay. Can you determine groundwater flow  
15 direction based on two groundwater monitoring  
16 points?

17 A You would need a third point. Whether it's  
18 a surface water point or some other reference point  
19 that will define the vector, the groundwater  
20 direction.

21 Q Okay. So it's similar to like my high  
22 school geometry, for instance, where two points are  
23 going to determine the direction of a line, but you  
24 need three points to determine the characteristics  
25 of a plane?



1           A       I looked at the available data and looked  
2       at the condition of the water table or the  
3       piezometric surface under the current --

4                   THE REPORTER: I'm sorry. What surface?

5                   THE WITNESS: Piezometric surface, the  
6       groundwater elevations.

7       BY MR. GEE:

8           Q       Let me ask a simple question. Did you  
9       consider Saugus-1 and Saugus-2 operational when you  
10      conducted your evaluation?

11          A       Well, I knew Saugus-1 and 2 were out on --  
12      you know, to the north and to the east -- or west of  
13      the site, but my evaluation was of the data that  
14      shows containment -- or of the groundwater elevation  
15      data, and that's what I considered.

16          Q       Okay. So the answer is the influences  
17      from the Saugus-1 and Saugus-2 operation was not  
18      considered in your report?

19          A       Whatever was happening at the site,  
20      whatever has been going on at the site, under this  
21      containment system that they have operating at the  
22      site is what I considered.

23                   If they need to augment the containment  
24      under a different future condition, then that's  
25      going to be something they'll have to do at a future

1 time.

2 Q Okay. So my question is is that the  
3 evaluation that you did -- you know, that you did  
4 for your containment evaluation, the base conditions  
5 involved Saugus-1 and Saugus-2 operating?

6 A No, the base conditions involved what  
7 the -- what the groundwater elevations are telling  
8 us, what are the groundwater evaluations telling us  
9 about groundwater flow, and that is how I did my  
10 construct to look at containment that under these  
11 conditions at this time.

12 If the conditions change in the future and  
13 as I said in my report, this is kind of an ongoing  
14 thing, you may need to change pumping rates or you  
15 need to make some kind of adjustments in which wells  
16 are pumping at which time to maintain that capture.  
17 It's an ongoing thing. It isn't a static -- it  
18 isn't a static system.

19 Q During your evaluation, was it an  
20 evaluation based on a static condition?

21 A It was an evaluation of the data -- the  
22 groundwater elevation data that was available at the  
23 time under pumping conditions, under pumping  
24 conditions of the groundwater containment systems.

25 Q Have you considered other scenarios that

1 Q Did counsel provide you with a copy of this  
2 document?

3 A I don't recognize this particular document.

4 Q I'm looking for a specific page cite.

5 Okay. Can you go to the top of page -- PDF  
6 page 12.

7 A PDF page 12.

8 Q Let me read it into the record while you're  
9 reading it. Okay.

10 "On May 19, 1993, DTSC investigated Rod  
11 Fong conducted an interview with Hassan Amini,  
12 Ph.D., R.G., principal geoscientist, McLaren Hart  
13 regarding Amini's previous employment at IT. Amini  
14 was the project manager on the environmental  
15 assessment report for the Anden Group, an investment  
16 partner with Whittaker. Amini stated" -- "Amini  
17 stated the project started in approximately  
18 December 1989 and lasted until shortly after a draft  
19 report was issued in May 1990.

20 "Amini stated that the project was  
21 terminated following the draft report prepared by  
22 Amini and IT. Amini stated the report was not well  
23 received by Whittaker, specifically Edward Muller,  
24 Vice President and Chief Administrative Officer,  
25 Secretary General and Chief" -- I'm sorry -- "Vice

1 President and Chief Administrative Officer,  
2 Secretary General for Whittaker, whom Amini  
3 characterized as being angry and resentful on IT's  
4 findings and suggestions for remediation. Amini  
5 stated that Muller was angry because Amini's opinion  
6 the entire valley where the RCRA burn pits unit was  
7 located was contaminated to the extent that the  
8 whole valley could be considered a waste management  
9 unit and would under state and federal law require  
10 disclosure and cleanup.

11 "According to Amini, Whittaker employed Al  
12 Simmons subsequently contracted with Whittaker to  
13 perform the cleanup, which took approximately one  
14 week. Amini stated Anden authorized IT to have an  
15 IT employee on-site to bring Simmons' cleanup for  
16 observation purposes only. According to Amini,  
17 Simmons 'combed'" -- and combed is in quotes -- "the  
18 valley floor using heavy equipment having large  
19 metal teeth, instead of first determining the extent  
20 of chemical contamination in the soil, followed by  
21 removal of contaminated soil. Amini stated the  
22 pointed out discolored and/or otherwise questionable  
23 waste materials that were unearthed by Simmons' crew  
24 only to have the questionable waste material pushed  
25 to one side, and eventually commingled with other

1 STATE OF CALIFORNIA )  
2 ) ss  
3 COUNTY OF ORANGE )

4 I, LINDA NICKERSON, CSR #8746, in and for  
5 the State of California do hereby certify:

6 That, prior to being examined, the witness  
7 named in the foregoing deposition was by me duly  
8 sworn to testify the truth, the whole truth, and  
9 nothing but the truth;

10 That said deposition was taken down by me in  
11 shorthand at the time and place therein named, and  
12 thereafter reduced to typewritten form at my  
13 direction, and the same is a true, correct, and  
14 complete transcript of the testimony at said  
15 proceedings.

16 Before completion of the deposition, review  
17 of transcript [X] was [ ] was not requested. If  
18 requested, any changes made by the deponent (and  
19 provided to the reporter) during the period allowed  
20 are appended hereto.

21 I further certify that I am not interested  
22 in the event of the action.

23 WITNESS MY HAND this 13th day of October, 2020.

24 

25 LINDA NICKERSON, CSR No. 8746



**EXHIBIT L**

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

--oOo--

SANTA CLARITA VALLEY WATER  
AGENCY,

Plaintiff,

vs.

Case No.

WHITTAKER CORPORATION,

2:18-cv-6825-GW(RAOx)

Defendant,

\_\_\_\_\_/

AND RELATED CASES.

\_\_\_\_\_/

VIDEO-RECORDED DEPOSITION OF GAYNOR DAWSON, P.E.

VERITEXT VIRTUAL

FRIDAY, SEPTEMBER 18, 2020

Reported by:

Anrae Wimberley, CSR No. 7778

Job No. 4257939

Page 1

1 the single largest product produced by Whittaker, 09:44:28  
2 and that would have been the Navy.

3 Q. Right. Sorry I wasn't clear.

4 Focusing on World War II or the period,  
5 say, through 1945. 09:44:37

6 Are you with me?

7 A. Yes.

8 Q. And my question was simply, when you refer  
9 to the "Army," are you distinguishing the Army from  
10 the Navy? 09:44:48

11 A. I do not recall whether there were any  
12 Navy rounds in the munitions that they were  
13 building. They could well have been for aircraft  
14 guns on the Naval ships. I guess it would be more  
15 correct for me to have said Department of Defense. 09:45:08

16 Q. Okay. But, again, you haven't seen any  
17 contract between Bermite and the Navy for any period  
18 of time; correct?

19 A. That is correct. I've seen references to  
20 them in the findings of fact and conclusions, but 09:45:23  
21 I've not seen the actual documents themselves.

22 Q. And what product or products do you  
23 believe Bermite was commissioned to manufacture for  
24 either the Army or the Navy between mid 1942 and the  
25 end of 1945? 09:45:43

1 regarding the purchase of TCE that would have been 10:28:06  
2 required at some point in time, but that were not  
3 available to you to review; is that correct?

4 A. That's correct.

5 Q. And so do you have an expert opinion, even 10:28:23  
6 though you haven't seen the purchase contracts -- by  
7 the way, have you seen any logs as to how --  
8 documenting the use of TCE during the time it was  
9 used?

10 A. Well, I've certainly seen deposition 10:28:38  
11 testimony and some of the procedures documents that  
12 would indicate that chlorinated solvents are used  
13 both for cleaning mandrels and mixing equipment, as  
14 well as would have been used for the degreasing of  
15 the motor casings for the rockets. 10:29:00

16 Q. Okay. Do you recall the position, title  
17 or name of the person who testified as to degreasing  
18 of shell casings as opposed to motor casings? This  
19 fellow you mentioned earlier that Zoch and Brigham  
20 talked about, do you recall that person's title? 10:29:33

21 A. Well, no, I don't. But let me be sure  
22 we're talking about the same person. I have never  
23 said that I read deposition testimony of someone who  
24 claimed to have degreased shell casings. The  
25 statement that was made was he believed chlorinated 10:29:50

1 solvent use might go back to World War II. He did 10:29:53  
2 not say for what purpose, at least in what I saw.  
3 Q. Right.  
4 You didn't read his deposition; right?  
5 A. That's correct. 10:30:02  
6 Q. So you found out someone was -- had given  
7 testimony that the experts you relied on looked at  
8 his testimony, and you didn't read that transcript;  
9 is that correct?  
10 A. That's correct. 10:30:15  
11 Q. So can you describe for us whether you --  
12 for the work you did as an expert in this case --  
13 first, what was the question or questions you were  
14 actually asked to evaluate?  
15 A. I was asked to evaluate the likely release 10:30:41  
16 source -- sources of releases of chlorinated  
17 solvents and perchlorates at this facility. I was  
18 also asked to opine as to whether they would have  
19 met the standards of practice at the time.  
20 Q. Okay. And if I wanted -- if I came to you 10:31:08  
21 with a hypothesis and I said, you know, at this  
22 960-acre site, Mr. Dawson, I think it's most likely  
23 that the sources of releases for VOCs occurred at a  
24 particular building.  
25 Are you with me? 10:31:36

1 cases involved looking at some primary source 02:35:24  
2 materials, data and documents?

3 A. That's correct, as well as -- certainly in  
4 the case of the aircraft company, we were actually  
5 able to go in and take additional samples to -- 02:35:39  
6 predict what they would show, then take the samples  
7 over time, and they, indeed, corresponded with our  
8 model.

9 Q. And in those other matters that you're  
10 referring to at page 13 of your expert report, 02:35:53  
11 those -- the conduct you were looking at, or the  
12 contracts, that went back some number of years or  
13 decades; right?

14 A. Oh, yes. Well, let's say -- I believe the  
15 Lockheed plant was built -- boy, I think it might 02:36:11  
16 have been built in the '50s, so certainly several  
17 decades, yes.

18 Q. And what's your understanding as to why it  
19 was in each of those other cases, for other solid  
20 rocket fuel facilities, they maintained and were 02:36:27  
21 able to provide you records, but that didn't happen  
22 in this case?

23 MR. BLUM: Speculative.

24 THE WITNESS: I have no idea. I've spoken with  
25 the president of Whittaker -- the current president 02:36:42



1 of Whittaker. He says they have a don't-destroy 02:36:45  
2 policy, a file retention, record retention policy.  
3 So I have no idea why those records don't exist.  
4 All I know is that I have requested them and no one  
5 can put their hands on them. 02:37:01

6 BY MR. RICHARD:

7 Q. Did you learn that there were some records  
8 on-site that total at least 110,000 pages of  
9 materials that have, as of last Friday, just been  
10 produced in this case? 02:37:16

11 A. I have no knowledge of that.

12 Q. Okay. You didn't spend the weekend  
13 looking at those?

14 A. No.

15 Q. Okay. So it's fair to say you knew more 02:37:29  
16 about the operations and contracts at each of the  
17 three solid rocket facilities than you do for  
18 Bermite; correct?

19 A. Yes, sir.

20 Q. And so at least with respect to 02:37:46  
21 operational or disposal-of-waste practices, you'd  
22 have to be a little hesitant about drawing  
23 comparisons between those other facilities and  
24 Bermite/Whittaker, would you not?

25 A. Well, what I would say is that the -- I am 02:38:05

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1 Q. Is it fair to say that a lot of your 05:36:31  
2 opinions in this case, Mr. Dawson, rely in part on  
3 materials you haven't seen?

4 A. If you mean primary source materials  
5 because I'm referencing the findings of fact and 05:36:48  
6 conclusions or the expert reports of other  
7 individuals from earlier on, I take those documents  
8 at face value. I have not seen the antecedent  
9 documents on which they're based.

10 Q. Okay. So the answer is, yes, you're 05:37:09  
11 relying on having not seen certain primary source  
12 materials to draw conclusions based on the absence  
13 of evidence?

14 A. That's correct. I've requested sources of  
15 prime documents, but to the best of my knowledge, 05:37:30  
16 nobody has been able to locate those documents.  
17 That's one of the reasons why I've relied on work of  
18 my earlier experts who apparently had access to more  
19 documents than we do.

20 Q. And are there any principles in your line 05:37:43  
21 of work that come to bear where a scientist or  
22 someone applying scientific methodologies purports  
23 to rely on the absence of evidence to draw  
24 conclusions?

25 A. Sometimes that's the best evidence we 05:38:05

1 strikes a familiar cord in terms of the motion to 05:53:03  
2 dismiss.

3 Q. Okay. But if it's not listed, then it's  
4 not something you considered?

5 A. It's not something I saw or have in my 05:53:15  
6 possession.

7 Q. But if you list an order, can we assume  
8 you read it?

9 A. Yes.

10 Q. And just in terms of your methodology, 05:53:34  
11 when you saw two expert reports referring to  
12 testimony of a Mr. Arnold, did you take any steps to  
13 obtain a copy of that deposition?

14 A. If you're referring to something that was  
15 referred to in your experts' reports, I just 05:54:04  
16 received those in the --

17 Q. No, I'm sorry.

18 I'm referring to earlier today we talked  
19 about Brigham and Zoch, and they had a disagreement  
20 as to the significance of someone's testimony that 05:54:17  
21 TCE was used during World War II. And you saw an  
22 excerpt of that fellow. Assume that that fellow's  
23 name was Mr. Arnold.

24 Did you ask anyone for a copy of that  
25 deposition? 05:54:33

1 A. No, I did not. 05:54:34

2 Q. So in terms of case materials, whatever  
3 counsel sent you they sent you, and you received it?

4 A. That's correct.

5 And I was satisfied with Mr. Brigham's 05:54:45  
6 explanation for why Arnold's testimony was not  
7 helpful in determining the likelihood of solids used  
8 on-site. He was talking about vague recollections  
9 at a time when he wasn't even working at the  
10 facility, as I recall. 05:55:08

11 And Mr. Brigham had done an exhaustive  
12 search of government contracts and files to  
13 determine if there were products or equipment  
14 on-site that would have required the use of  
15 chlorinated solvents. 05:55:21

16 Q. So if we want to understand the  
17 limitations of Mr. Brigham's research -- because  
18 we've already talked about the documents that you  
19 know existed at one point in time and haven't seen  
20 that were generated by Bermite and Whittaker. 05:55:35

21 If we wanted to know the extent of  
22 Mr. Brigham's review, we would have to talk to him;  
23 right?

24 MR. BLUM: Objection; compound, argumentative  
25 and vague. 05:55:47

1 THE WITNESS: Well, you can look at his report. 05:55:48  
2 And he not only lists the references, but he tells  
3 you all the databases and materials that he did  
4 search through.  
5 BY MR. RICHARD: 05:55:58  
6 Q. Right.  
7 But he's not an expert in this case, you  
8 are; right?  
9 A. In the instant case, that's correct. He  
10 was an expert in the case -- the predecessor case 05:56:08  
11 that involved the very same activities and  
12 materials.  
13 Q. But it didn't involve my client.  
14 So I need to understand. You place great  
15 weight on it. In fact, it's -- did you take any 05:56:23  
16 steps to validate Mr. Brigham's methodology?  
17 MR. BLUM: Asked and answered.  
18 THE WITNESS: His methodology was -- as a  
19 historian, he knew what records should exist and he  
20 went to the locations where those records were to be 05:56:45  
21 stored. And he went through what records were  
22 available. So I'm aware of the methodology. And  
23 it's all you could do. If the records don't exist,  
24 you can't manufacture them.  
25 BY MR. RICHARD: 05:57:01

1 Q. Mr. Brigham didn't talk at all about 05:57:01  
2 whether Bermite manufactured rockets that were  
3 predecessor rockets to the JATO system that you have  
4 talked about, did he?

5 A. Not to my recollection, no. 05:57:25

6 Q. He didn't address whether Bermite  
7 conducted research and development on rockets for  
8 the military before 1948, did he?

9 A. Not that I recall.

10 Q. Okay. So if he didn't see it and he 05:57:46  
11 didn't discuss it, you didn't see it and you didn't  
12 discuss it?

13 A. Correct.

14 MR. RICHARD: Okay. I think we've . . . oh,  
15 just hang on one second. We're almost done. I just 05:58:10  
16 wanted to see if I can find this one document.

17 Well, I'm sorry. It doesn't look like I  
18 uploaded this one document. Sorry.

19 BY MR. RICHARD:

20 Q. In the interest of concluding here, can 05:59:34  
21 you turn to page 12. There's one document I wanted  
22 to ask you about, but I may just show you since it's  
23 a graph. And you can tell me if it's the one you  
24 were looking at. So if you could turn to page 12 of  
25 your report, right after the reference to 05:59:51



1 I, the undersigned, a Certified Shorthand  
2 Reporter of the State of California, do hereby  
3 certify:

4 That the foregoing proceedings were taken  
5 before me at the time and place herein set forth;  
6 that any witnesses in the foregoing proceedings,  
7 prior to testifying, were administered an oath; that  
8 a record of the proceedings was made by me using  
9 machine shorthand which was thereafter transcribed  
10 under my direction; that the foregoing transcript is  
11 a true record of the testimony given.

12 Further, that if the foregoing pertains to  
13 the original transcript of a deposition in a Federal  
14 Case, before completion of the proceedings, review  
15 of the transcript ( ) was (X) was not requested.

16 I further certify that I am neither  
17 financially interested in the action nor a relative  
18 or employee of any attorney of any party to this  
19 action.

20 IN WITNESS WHEREOF, I have this date  
21 subscribed my name this 6th day of October, 2020.

22  
23   
24

25 ANRAE WIMBERLEY, CSR No. 7778

**EXHIBIT M**

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

SANTA CLARITA VALLEY WATER )  
AGENCY, ) No. 2:18-CV-6825-  
Plaintiff, ) GW(RAOx)  
VS. )  
WHITTAKER CORPORATION, ) Pages 1-213  
Defendant. )  
----- )  
AND RELATED CROSS-ACTION. )  
----- )

ZOOM/TELEPHONIC DEPOSITION OF:

DANIEL SHOUP, Ph.D.

FRIDAY, SEPTEMBER 25, 2020

9:26 A.M.

Reported by: LINDA NICKERSON

CSR No. 8746

Page 1

1 Is there a specific objection?

2 MR. HAGSTROM: Presuppose an answer.

3 MR. RICHARD: Presuppose an answer. I  
4 don't know that one in the Evidence Code.

5 MR. HAGSTROM: Well, you should look it up  
6 then, Patrick.

7 MR. RICHARD: Presuppose an answer, huh.

8 Q Sir, are you offering the expert opinion  
9 that anyone other than Whittaker Corporation  
10 contaminated plaintiff's wells?

11 MR. HAGSTROM: Same objections.

12 BY MR. RICHARD:

13 Q You can go ahead and answer. When counsel  
14 objects, unless he instructs you not to answer for  
15 some reason, the way the rules work, since we don't  
16 have a judge sitting here, Dr. Shoup, is that you go  
17 ahead and answer, and then a judge can look at  
18 whatever counsel said and decide if there's any  
19 merit to that later.

20 So do you have the question in mind,  
21 Dr. Shoup?

22 A Yes, I do. My scope of work was not to  
23 determine whether -- the source of groundwater  
24 pollution.

25 My scope of work was to look at historical

1 location was not my focus in this.

2 BY MR. RICHARD:

3 Q Okay. I'm just trying to get a yes or no  
4 answer where we can, and then if you need to explain  
5 your answer, go ahead. So I'm just trying to  
6 identify what you will be testifying to at trial.

7 My first question is: Am I correct that  
8 you will not be offering the expert opinion at trial  
9 that someone other than Whittaker contaminated  
10 plaintiff's wells?

11 MR. HAGSTROM: Same -- same objection as  
12 before.

13 THE WITNESS: Yes.

14 BY MR. RICHARD:

15 Q Are you offering the opinion that someone  
16 other than Whittaker is a potentially responsible  
17 party under CERCLA?

18 A Presenting evidence that might help someone  
19 who is an expert in CERCLA law make such a  
20 conclusion, but I don't -- I'm not offering that  
21 conclusion.

22 Q Do you know what a PRP is under CERCLA?

23 A I do.

24 Q And is that something you studied before  
25 this case?

1 Q So do you have an expert opinion as to what  
2 is or should be required to be a potentially  
3 responsible party?

4 A No.

5 Q And are you offering an opinion that  
6 Dr. Slade was negligent in any of his work regarding  
7 any of plaintiff's wells?

8 I didn't hear you. Do you have the  
9 question?

10 A I'm thinking about the research. I'm not  
11 offering that opinion, no.

12 Q You've read a couple of hundred-page  
13 reports prepared by Dr. Slade in the '80s?

14 A Uh-huh.

15 Q Yes?

16 A Yes, I did.

17 Q And you read those through cover to cover?

18 A I skimmed them all and I read the sections  
19 which seemed to be most pertinent to my scope of  
20 work.

21 Q I'm sorry. So is there more?

22 A There are dozens of pages that are the  
23 background of the hydrogeology of the Santa Clara  
24 River Basin. I didn't, you know, read those in  
25 great detail, but I did look at every page to see if



1 have used TCE or PCE, and here I'm speaking about  
2 the first report, in that there are many sources of  
3 potential groundwater pollution in the vicinity  
4 which from other -- other potential sources, such as  
5 petroleum hydrocarbons or PCBs, we weren't examining  
6 those.

7 We were looking only at businesses that  
8 might have used PCE or TCE or were definitely  
9 attested to have used those from the State of  
10 California records or other sources.

11 With the second report, again, the scope of  
12 work was geographic and it was a half-mile radius  
13 around Saugus-1 and Saugus-2 drinking water wells,  
14 and there was a particular point -- period of time  
15 that we were interested in which, you know, up to  
16 the point at which those two wells were completed.

17 So in other words, we were focusing  
18 primarily on the period 1986 from when Dr. Slade  
19 created his recommendations to late 1989 with some  
20 information about regulatory developments in the  
21 1970s because I felt that that was information that  
22 local water district officials and staff would have  
23 been aware of given their line of work.

24 So the second report had a geographical and  
25 chronological sort of filter. That's how we

1 selected information for that, but not by pollution  
2 source.

3 The second report considers any -- any  
4 potential source of groundwater pollution, not just  
5 PCE or TCE.

6 BY MR. RICHARD:

7 Q So do you have a reference in your billing  
8 of those six to eight environmental reports you  
9 reviewed regarding Whittaker?

10 A I probably have some notes in my computer  
11 that I can -- I'd have to -- I'd have to take a few  
12 minutes to find.

13 Q I won't ask you to do that right now. I'm  
14 just trying to get a broad lay of the land.

15 Do you have notes in your computer that  
16 would identify documents that you considered or  
17 reviewed, but did not include in your report in your  
18 final reports?

19 A Yes, I have some handwritten or some -- not  
20 handwritten, but typescript notes, and I think I  
21 might have saved some downloaded documents.

22 Q Do you have any document that identified  
23 your approach at the outset of this engagement, some  
24 protocols or work plan, anything like that?

25 A I prepared a scope of work for my clients.

1 se. So I would say it's accurate and complete in  
2 terms of my professional --

3 THE REPORTER: In terms of my professional  
4 what?

5 THE WITNESS: Experience.

6 BY MR. RICHARD:

7 Q Fair enough. So in the first paragraph  
8 after your reference to CEQA and NEPA, you have a  
9 reference that says "and forensic historical  
10 research to identify historic sources of soil and  
11 groundwater pollution."

12 Do you see that?

13 A I do.

14 Q Now, can you give us -- tell us what you've  
15 done in that regard?

16 A Well, over the last -- when you say "done,"  
17 do you mean what type of work products I've  
18 produced?

19 Q Whatever you -- whatever your experience is  
20 with forensic historical research to identify  
21 historic sources of soil and groundwater pollution.

22 A I would say that I worked on about 50  
23 projects of this type, and I've managed about 20 in  
24 the last five years or so.

25 These studies are generally similar to the

1 STATE OF CALIFORNIA )  
2 ) ss  
3 COUNTY OF ORANGE )

4 I, LINDA NICKERSON, CSR #8746, in and for  
5 the State of California do hereby certify:

6 That, prior to being examined, the witness  
7 named in the foregoing deposition was by me duly  
8 sworn to testify the truth, the whole truth, and  
9 nothing but the truth;

10 That said deposition was taken down by me in  
11 shorthand at the time and place therein named, and  
12 thereafter reduced to typewritten form at my  
13 direction, and the same is a true, correct, and  
14 complete transcript of the testimony at said  
15 proceedings.

16 Before completion of the deposition, review  
17 of transcript [X] was [ ] was not requested. If  
18 requested, any changes made by the deponent (and  
19 provided to the reporter) during the period allowed  
20 are appended hereto.

21 I further certify that I am not interested  
22 in the event of the action.

23 WITNESS MY HAND this 15th day of October, 2020.

24 

25 LINDA NICKERSON, CSR No. 8746

**EXHIBIT N**

Videotaped Deposition of  
**Richard Slade, PG, CEG**  
PMK for Santa Clarita Valley Water Agency  
February 06, 2020  
Volume I

Santa Clarita Valley Water Agency  
vs.  
Whittaker Corp.



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1 Do you understand that?

2 A Yes.

3 Q Because I don't want to get mixed up in,  
4 you know, irrelevancies.

5 So were they aware that the well could act  
6 as a conduit for the movement of pollutants in a  
7 vertical manner?

8 A I honestly don't know. I don't think we  
9 had any conversations about it directly.

10 Q Okay. Well, let me ask it another way.

11 When the well was constructed, do you know  
12 whether any steps were taken to ensure that there  
13 was not a conduit created for the vertical movement  
14 of pollutants from any point downward?

15 A Yes.

16 Q What steps were taken?

17 A Among the things that were taken is -- and  
18 certainly in light of the standards -- the minimum  
19 standards as stated in Bulletin 84-1.

20 Excuse me. I just misquoted the number.

21 Let me --

22 Q 84-71 [sic].

23 A 84-71 -- thank you -- that talks about  
24 distances from known sources of contamination like  
25 cesspools.

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1 (Reporter clarification.)

2 There's a table in here that lists this. I  
3 could go through and find it, but it's certainly in  
4 there: Separations from water supply wells to  
5 obviously known sources of contamination.

6 Q Okay.

7 A That's one thing.

8 So those standards -- and then it also  
9 talks about for public supply -- it gives sanitary  
10 seal depths, required depths of 20 feet for  
11 agricultural-type wells, 20 feet for domestic supply  
12 wells and 50 feet for municipal supply wells as a  
13 minimum standard.

14 We, on the other hand, wanted to separate  
15 the two aquifer systems that we had defined  
16 previously in the Santa Clarita Valley, and to help  
17 further management of the basin, we put unusually  
18 deep seals in these wells. They started, depending  
19 on which well it is, at depths of 460 to perhaps  
20 close to 500 feet.

21 In addition, we put the top -- the depth to  
22 the top of the perforations at very deep depths, in  
23 excess of 500 feet. That was extremely unusual for  
24 any wells anywhere.

25 Q Okay. Anything else?

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1 of the Santa Clarita Valley --

2 (Reporter clarification.)

3 -- what types of general land use there  
4 were.

5 Q And within several square miles of S-1 or  
6 S-2, did you find that there was industrial  
7 activity?

8 A As in any groundwater basin, yes.

9 Q Okay. Well, was there a spec- -- did --  
10 was there a specific attempt made to determine  
11 whether or not the California agencies that  
12 regulated hazardous wastes had any documents to show  
13 that there had been releases of hazardous wastes  
14 upstream of where S-1 and S-2 would be located?

15 A I'm trying to go back 30-some-odd years.  
16 It's difficult.

17 I think we maybe tried to do a little bit  
18 with the Regional Board, but their files weren't  
19 great, and there hadn't been a lot of regulations of  
20 individual sites. And it wasn't easy like it is --  
21 relatively easy -- it's not as easy as -- compared  
22 to today, it was horrifically different back then.

23 Q I'm -- I'm not talking about the Regional  
24 Board. I'm talking about the hazardous waste  
25 regulators at this point.

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Whittaker Corp.

1 I, the undersigned, a Certified Shorthand.  
2 Reporter of the State of California, do hereby  
3 certify:

4 That the foregoing proceedings were taken  
5 before me at the time and place herein set forth;  
6 that any witnesses in the foregoing proceedings,  
7 prior to testifying, were duly sworn; that a record  
8 of the proceedings was made by me using machine  
9 shorthand, which was thereafter transcribed under my  
10 direction; that the foregoing transcript is a true  
11 record of the testimony given.

12 Further, that if the foregoing pertains to  
13 the original transcript of a deposition in a federal  
14 case, before completion of the proceedings, review  
15 of the transcript [X] was [ ] was not requested.

16 I further certify I am neither financially  
17 interested in the action nor a relative or employee  
18 of any attorney or party to this action.

19

20 IN WITNESS WHEREOF, I have this date  
21 subscribed my name.


22

Dated: February 14, 2020

23

24

25

  
\_\_\_\_\_  
LORI SCINTA, RPR  
CSR No. 4811

**EXHIBIT O**

UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

SANTA CLARITA VALLEY WATER ) NO. 2:18-cv-6825  
AGENCY, ) GW(RAOx)

Plaintiff,

v.

WHITTAKER CORPORATION and  
DOES 1-10, Inclusive,

Defendant.

-----  
AND RELATED CASES.  
-----

REMOTE DEPOSITION OF DUANE L. STEFFEY, PH.D.

San Francisco, California

Friday, October 2, 2020

Reported by:  
Heidi Hummel-Grant  
CSR No. 12556

Pages 1 - 214

Page 1



1 Q When did he introduce you to counsel in this  
2 matter?

3 A I believe it would have been in -- approximately  
4 in July of this year.

5 Q And were you given an assignment at that time?

6 A Yes.

7 Q And what was your assignment in July?

8 A My assignment was to be -- to evaluate the --  
9 the work product of the -- well, to be prepared to  
10 evaluate the work product of the experts that were  
11 retained by plaintiffs and to also, as a -- in  
12 preparation for that, to review some of the available  
13 water quality monitoring data produced by the water  
14 agency.

15 Q And so did counsel or Peter Mesard describe for  
16 you your initial tasks in this matter back in July?

17 A That would have come primarily -- I had a very  
18 short discussion with Peter and -- and I had a much more  
19 extended discussion with the attorneys at -- at the law  
20 firm.

21 Q And did you read any drafts of Peter Mesard's  
22 expert report before it was finalized?

23 A No.

24 Q So you were asked to prepare yourself to respond  
25 to experts, and you were asked that at a time before the

1 plaintiff, the water agency, or SIC, another party,  
2 before any expert reports have been provided on their  
3 behalf; is that right?

4 A Yes, that's correct.

5 Q Okay.

6 So what was the subject matter or area that --  
7 of your assignment in July, if you could describe that  
8 as best you can?

9 A Certainly. I -- I think at that time the  
10 attorneys anticipated there would be -- that one of the  
11 issues of contention would be the extent to which  
12 detections of volatile organic constituents at  
13 downstream locations in the -- in the water agency  
14 system would -- could be attributed to upstream  
15 locations, and, in particular, to the Saugus 1 and 2  
16 wells and the -- and the perchlorate -- associated  
17 perchlorate treatment facility.

18 MR. RICHARD: There's some banging here. Why don't  
19 we go off the record for two minutes. See if it's  
20 going to be a permanent issue.

21 Off the record.

22 (A recess is taken.)

23 THE REPORTER: We're back on the record.

24 MR. RICHARD:

25 Q So you were telling us, sir, that in July you

1 had discussions about responding to potential reports  
2 from the other parties in this case regarding detections  
3 in downstream locations. I think I got interrupted by  
4 some construction. Can you finish describing for us  
5 your initial scope of work?

6 A Well, certainly. And the discussions I had  
7 with -- with counsel for Whittaker in July, I -- I think  
8 it was clear even at that time that there would be --  
9 there were pertinent issues concerning the detection of  
10 VOCs at downstream locations in the Santa Clarita Valley  
11 Water Agency system and the extent to which those  
12 detections could be attributed to upstream locations  
13 and, in particular, the Saugus 1 and 2 wells and the  
14 effluent from the associated perchlorate treatment  
15 facility.

16 Q Did you talk to any of Whittaker's other  
17 experts, in particular hydrogeologists retained on  
18 behalf of Whittaker in July?

19 A Yes, I believe I did.

20 Q And what did they tell you?

21 A Well, they helped to answer some of my questions  
22 about the system, make sure I understood the -- you  
23 know, the -- the process and the -- you know, the  
24 locations of interest in the system and the -- and the  
25 direction of water flow. And so I had, you know, those

1 kinds of general orientation discussions with the  
2 hydrogeologist.

3 Q Do you know who that was?

4 A Yes, that was Gary Hokkanen.

5 Q And how many times did you speak to  
6 Gary Hokkanen?

7 A Probably a handful of times, perhaps three or  
8 four conversations.

9 Q And did you review a draft of Gary Hokkanen's  
10 expert report in this matter?

11 A No, I did not.

12 Q Do you know if he reviewed a draft of your  
13 rebuttal report?

14 A I don't know that.

15 Q Did you discuss with anyone in July the  
16 possibility of you simply preparing a direct report  
17 rather than waiting to be a rebuttal expert?

18 A You know, I believe we had a discussion that  
19 indicated their -- you know, the schedule of the case  
20 allowed a report to be introduced at multiple points in  
21 the process. I do recall that -- a discussion about  
22 that.

23 And I would just -- I would just append that and  
24 say I had knowledge that other experts were preparing  
25 reports with an earlier deadline than I was working

1 toward.

2 Q Right. So you're first contacted at some point  
3 in July.

4 Does -- at that point did Peter Mesard tell you  
5 that he had a report due on August 3rd?

6 A No, I don't believe so.

7 Q Did you learn that at some point in July that  
8 plaintiff would be providing expert reports on  
9 August 3rd?

10 A Yes, I believe so. I came to understand that.

11 Q And so you were -- the first time you knew  
12 anything about anything substantive about Whittaker was  
13 at some point in July. Is that mid-July?

14 A Approximately, I suppose. Yeah, the -- our  
15 invoices and the date of our engagement letter would be  
16 a pretty good approximation.

17 Q Okay.

18 So you have a discussion with counsel. You came  
19 to learn that expert reports can be provided multiple at  
20 points in the litigation.

21 Is that what you said?

22 A Correct.

23 Q And so you learn at some point in July you're  
24 not going to be preparing a direct report?

25 A Yeah. Well, yes, I think that's -- that's true.

Certification of Court Reporter

Federal Jurat

I, the undersigned, a Certified Shorthand  
Reporter of the State of California do hereby certify:

That the foregoing proceedings were taken  
before me remotely at the time herein set forth; that  
any witnesses in the foregoing proceedings, prior to  
testifying, were placed under oath; that a verbatim  
record of the proceedings was made by me using machine  
shorthand, which was thereafter transcribed under my  
direction; further, that the foregoing is an accurate  
transcription thereof.

That before completion of the deposition a  
review of the transcript was not requested.

I further certify that I am neither  
financially interested in the action nor a relative or  
employee of any of the parties.

IN WITNESS WHEREOF, I hereby subscribe my name  
this 18th day of October, 2020.



Heidi Hummel-Grant

Certified Shorthand Reporter No. 12556



**EXHIBIT P**

## BERMITE



Bermite Division  
Whittaker Corporation  
22116 West Soledad Canyon Road  
Saugus, California 91350  
213/629-1403 805/259-2241  
Telex 651436

**Whittaker**

October 26, 1982

Mr. David S. Wong, R. S.  
Waste Management Specialist  
State of California Department of Health Services  
Hazardous Materials Management Section  
107 South Broadway, Room 7012  
Los Angeles, California 90012

Ref: Interim Status Document CAD 064573108

Subject: Waiver for Groundwater Monitoring

Dear Mr. Wong:

Under our Interim Status Document effective on September 25, 1981, Bermite was not required to undertake groundwater monitoring. During our meeting of 10/6/82 you and Nester "Esedera" provided me with a copy of the Department of Health Services memorandum of January 20, 1982 which addressed the subject of "Water Quality Requirements in Interim Status Documents." The rationale arrived at for Bermite not to engage in groundwater monitoring is:

- 1) The lagoons and tanks used for our liquid waste storage are monitored daily.
- 2) Alarms and monitoring boxes are so placed as to detect any leakage from our pond.
- 3) Our lagoons are situated in mountainous terrain that is several "hundred" feet above the water level in our district.
- 4) We will hire a qualified geologist or geotechnical engineer to verify our contention.

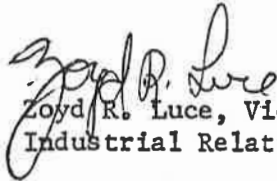
We feel that we do not require ground water monitoring. Other ordnance firms within Southern California have not applied to become TSDF because they claim exemption as Federal Contractors. The law per se, does not appear to be consistently applied.

The estimated cost of a groundwater monitoring system based upon a proposal from International Engineering Company, Inc. is in excess of \$120,000.00. We feel that no benefit would be derived by Bermite or from the community in which we reside by the installation of a groundwater monitoring system at Bermite.

Your further comments on this matter are solicited.

Very truly yours,

Bermite Division  
Whittaker Corporation

  
Lloyd R. Luce, Vice President  
Industrial Relations

**EXHIBIT Q**



**REMEDIAL ACTION PLAN**  
**Operable Unit 7 – Groundwater**  
**Former Bermite Facility**  
**Santa Clarita, California**

**December 2014**

Prepared for:

**California Environmental Protection Agency**  
**Department of Toxic Substances Control**  
**Chatsworth, California**

On behalf of:

**Whittaker Corporation**  
**Simi Valley, California**

Prepared by:

**AECOM Technical Services, Inc. (AECOM)**  
**999 West Town and Country Road**  
**Orange, California 92868**

District (SCAQMD) also provide regulatory oversight on the matters related to their respective jurisdictions. The RWQCB and CDFW are involved with the oversight of the investigation and remediation of the Site drainages and seasonal streams. The RWQCB is the lead agency with respect to the permitting of any treated wastewater discharges associated with the cleanup of the Site. The SCAQMD is the lead agency with respect to the permitting of remedial or investigation processes that may result in the generation of regulated air pollutants.

### **1.2.5 Scope and Status of OUs**

For effective management of Site characterization and remediation, the Site has been divided into seven OUs with OU-1 through OU-6 designated for soil and OU-7 for groundwater beneath the Site and its vicinity (Figure 2). Remediation efforts for OU-1 were conducted pursuant to the DTSC-approved RAP for OU-1 (CDM 2005) and included treatment of soil impacted with volatile organic compounds (VOCs) and perchlorate. These perchlorate remediation activities including excavation, treatment, and backfilling of impacted areas within OU-1 were completed in 2009. The soil vapor extraction (SVE) operations for OU-1 were recently completed and cleanup confirmation sampling was performed to document that the objectives of the OU-1 RAP have been met. The OU-1 SVE systems have been decommissioned as outlined in the OU-1 Remedial Action Completion Report (CDM 2012). The remediation of the impacted soil in OU-2 through OU-6, as well as the deep soil impact at the Site have been addressed in the RAP for OU-2 through OU-6 (CDM 2010a) that was approved by the DTSC. Preparation of the Remedial Design document for implementation of the OU-2 through OU-6 RAP is complete and has been approved by the DTSC (DTSC 2013). Site-wide electrical design is currently being prepared in preparation for soil and groundwater remedial activities at the Site. This RAP addresses OU-7, and includes remedial action for impacted groundwater at the Site and its vicinity.

Domestic water supply wells are located hydraulically downgradient of the Site. Six of these production wells (Saugus-1, Saugus-2, NC-11, V-157, V-201, and Stadium Well shown on Figure 2) have been impacted with chemicals (primarily perchlorate). In addition perchlorate was detected during one monitoring event in the Water Supply Well Q2 during the Spring of 2005. However, perchlorate has not been detected in Well Q2 during the subsequent monitoring events. Recently, perchlorate was detected in low concentrations in V-205 that is currently under study and evaluation by the Valencia Water Company (VWC 2011).

Off-site groundwater remediation efforts via operation of a wellhead treatment system installed on production wells Saugus-1 and Saugus-2 were addressed in the Interim RAP (Kennedy/Jenks 2005). However, since 2010, the groundwater is being extracted from production wells Saugus-1 and Saugus-2, and treated in the Saugus Perchlorate Treatment Facility operated by Castaic Lake Water Agency (CLWA). Additional remediation efforts are proposed for Well V-201 and potentially for Well V-205 which include wellhead treatment systems.



The highest perchlorate and VOC (TCE/PCE) concentrations are reported in localized groundwater “hot-spot” areas characterized by low to very low hydraulic conductivity (property of soil/rock that describes the ease with which groundwater can move through pore spaces in subsurface environment). These groundwater hot-spot areas include (see Figure 7a):

- Soledad East Valley (Area 11 Perchlorate Hot-Spot);
- Hot-Spot #1 (Area 67 Eastern Perchlorate Hot-Spot);
- Hot-Spot #2 (Area 67 Western Perchlorate Hot-Spot);
- Hot-Spot #3 (Area 75 TCE Hot-Spot); and
- Hot-Spot #4 (Area 75 PCE Hot-Spot): The high concentrations of 1,1-DCE are localized in and are associated with this hot-spot.

These hot-spot areas are summarized in Table 1. A summary of ranges of detected concentrations of primary COPCs (perchlorate, PCE, TCE, and 1,1-DCE) in groundwater in the Northern Alluvium Area are presented in Table 2.

### **2.3.2 Saugus Aquifer South of San Gabriel Fault**

The primary COPCs in the Saugus Aquifer south of the San Gabriel Fault are perchlorate and TCE. Other COPCs detected at much lower concentrations in this area of the Site include PCE, RDX, NDMA, 1,4-dioxane, and carbon tetrachloride. Previous groundwater monitoring results have indicated that groundwater impacted with perchlorate and VOCs is limited primarily to HSUs S-I, S-IIIa and S-IIIc (refer to Section 2.2.2.2 for background on HSUs). In addition, monitoring data indicate that perchlorate and VOCs were either not detected or were detected sporadically at relatively low concentrations in HSU S-Va. It is important to note that previous groundwater monitoring results at Multiport Well MP-2 found anomalous elevated concentrations of COPCs in S-Va and S-VII screen zones shortly after well installation in 2002. Since then, concentrations of COPCs have decreased to non-detect or very low (CH2M Hill 2011) and the anomalous elevated concentrations can be attributed to other factors and not representative of deeper aquifer characteristics.

Figure 7c shows the approximate extents of groundwater impacted with perchlorate and TCE in Saugus Aquifer south of the San Gabriel Fault based on the FS (ENVIRON 2011a) and May 2013 groundwater monitoring results (AECOM 2013b). Table 3 presents a summary of ranges of detected concentrations of primary COPCs in groundwater present in HSUs S-I, S-III, S-IIIa, S-IIIc and S-Va.

### **2.3.3 Perched Groundwater**

Localized perched groundwater zones are generally present in OU-7 beneath areas designated as OU-2/6 and to a limited extent beneath OU-1Ds and OU-3 (Figure 2). As shown on Figure 7b, these perched zones are impacted with relatively high concentrations of perchlorate. In addition, perchlorate-impacted perched groundwater has also been identified beneath OU-5 north of the San Gabriel Fault. A summary of ranges of detected concentrations of perchlorate, PCE, and TCE in perched groundwater at the Site is presented in Table 4.

### **2.3.4 Impact to Off-Site Domestic Water Supply Wells**

Domestic water supply wells are located hydraulically downgradient of the Site. The groundwater monitoring data shows that VOCs exceeding their respective maximum contaminant levels (MCLs) are limited to the on-site area (Figure 7c) and do not impact off-site water supply wells. However, perchlorate has been reported at concentrations exceeding its MCL in the samples collected from the following off-site wells (see Figure 2):

- Five production wells screened in the Saugus Formation include Saugus-1, Saugus-2, NC-11, V-157 (Slade 2002), and V-201 (VWC 2011).
- Two production wells screened in alluvium include Stadium Well and Q2 (LSCE 2013).

Saugus-1, Saugus-2, NC-11, and V- 157 were shut-down in 1997, and V-201 was shut-down in 2010, following detection of perchlorate impact. V-205 has been used sparingly by Valencia Water Company since the shutdown of V-201 (CH2M Hill 2013). V-157 was destroyed in 2005. The pumping of Production Wells Saugus-1 and Saugus-2 was resumed in 2010 following construction of the Saugus Perchlorate Treatment System. This treatment system is used to treat the groundwater extracted from Wells Saugus-1 and Saugus-2 to reduce perchlorate concentrations to below its MCL. In addition, the recent detection of perchlorate in Well V-201 warrants installing a separate groundwater extraction and treatment system for that well to contain potential further transport of perchlorate to downgradient wells. Due to close proximity to Well V-201, and if perchlorate is persistently detected above regulatory levels in Well V-205, a well-head treatment for Well V-205 may be necessary.

Perchlorate was also detected in the Water Supply Well Q2 (screened in alluvium) during one monitoring event in the Spring of 2005 and a wellhead treatment system was installed at that well. After an interim period of wellhead treatment and consecutive non-detect samples for perchlorate, the wellhead treatment system was removed from Well Q2. Well Q2 has been returned to regular water supply service (LSCE 2013) so that only disinfection has since been applied.

include 6 µg/L for perchlorate and 5 µg/L for both TCE and PCE (the State drinking water MCLs).

- *Source Control:* To be consistent with a preference for permanent remedies, incorporating approaches that will reduce toxicity, mobility, or volume, the RAOs for the Northern Alluvium will include to the extent feasible, the remediation of on-site sources (groundwater hot-spots) of VOCs (primarily PCE, TCE, and 1,1-DCE) and perchlorate. Reduction in toxicity will include consideration of applicable risk-based groundwater cleanup goals (Table 5) for the vapor intrusion pathway in the Northern Alluvium Area. This is in addition to the source removal and soil remediation activities planned for the soil OUs.

### 5.3 SAUGUS AQUIFER

The following RAOs were developed for the Saugus Aquifer to the north and to the south of the San Gabriel Fault:

- *Protection of Off-site Water Supply Wells from Site-Related COCs:* Several off-site drinking water production wells located downgradient of the Site have been impacted by perchlorate. Therefore, the primary RAO for the Saugus Aquifer will be to reduce the potential for impact from Site-related COCs at concentrations above chemical-specific ARARs/TBCs in the extracted water from off-site downgradient water supply wells. For the Saugus Aquifer south of the San Gabriel Fault, the current extraction and treatment at off-site Production Wells Saugus-1 and Saugus-2 and future wellhead treatment for Well V-201 and potentially for Well V-205 are key elements in meeting this RAO.
- *Stabilization of the Extent of Impacted Groundwater:* To be consistent with the preference for permanent remedies, and to reduce the potential for further off-site transport of impacted groundwater, a RAO for the Saugus Aquifer is the on-site stabilization of the extent of impacted groundwater. For the Saugus Aquifer south of the San Gabriel Fault, alternatives that provide on-site stabilization will complement the current extraction at off-site Production Wells Saugus-1 and Saugus-2. On-site stabilization of the extent of impacted groundwater will be focused on Saugus HSUs S-I, and S-III, particularly in the areas where higher chemical concentrations have been detected. This will also provide further protection of downgradient receptors.
- *Boundary Containment:* Consistent with the RAO which addresses protection of off-site water supply wells, a long-term RAO is to meet, to the extent feasible, chemical-specific ARARs/TBCs at the Site boundary to protect downgradient receptors. Pertinent chemical-specific ARARs/TBCs include 6 µg/L for perchlorate and 5 µg/L for both TCE and PCE (the State drinking water MCLs). Therefore, remedies will be evaluated based on their effectiveness in achieving boundary containment.

### 5.4 PERCHED GROUNDWATER

The proposed RAOs for the perched groundwater are as follows:


- *Reduction of Further Transport of Constituents to Site Groundwater:* Perchlorate and VOCs (primarily TCE and PCE) are present within perched groundwater and associated deep vadose zone soil. Therefore, the primary RAO for the perched groundwater will be to reduce the potential for transport of these COCs to the underlying Saugus Aquifer. Reduction of stormwater infiltration in active drainages over deep impacted soil and perched groundwater will be a key element in meeting this RAO.

**Remedial Action Plan  
Operable Unit 7 – Groundwater  
Former Bermite Facility  
Santa Clarita, California**

Project Number: 60218087

*Prepared by:*  
**AECOM Technical Services, Inc.**  
999 West Town and Country Road  
Orange, California 92868

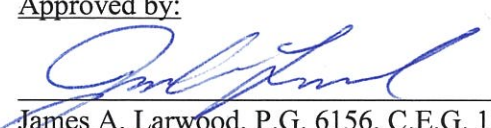
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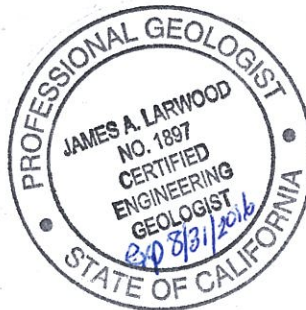
  
Harvinder Singh, P.E. C77946  
Project Engineer  
AECOM Technical Services, Inc.



Date: 12/18/2014

Approved by:

  
James A. Larwood, P.G. 6156, C.E.G. 1897  
Senior Geologist  
AECOM Technical Services, Inc.



Date: 12/18/2014

**EXHIBIT R**

GROUNDWATER  
ENGINEERING GEOLOGY  
WATER RESOURCES DEVELOPMENT

ROBERT T. BEAN  
CONSULTING GEOLOGIST

2729 WILLOWHAVEN DRIVE  
LA CRESCENTA, CALIFORNIA 91214  
(213) 249-0384  
RECEIVED  
DEC 6 1982  
PERSONNEL

December 4, 1982

Mr. Zoyd R. Luce  
Vice President, Industrial Relations  
Bermite Division  
Whittaker Corporation  
22116 W. Soledad Canyon Rd.  
Saugus, CA 91350

Dear Mr. Luce:

As requested by yourself and Jim Jisa, a reconnaissance of waste disposal facilities at the property on W. Soledad Canyon Road was conducted on November 15. The principal object of the reconnaissance was to evaluate whether or not groundwater monitoring for hazardous wastes would be required. In addition to a brief tour of your facilities with Jim Jisa, copies of the following were furnished for my guidance: letter of Nov. 1 1982 from Philip Bobel, Chief, Toxic and Waste Programs Branch, U. S. EPA, San Francisco, with attached Interim Status Inspection Checklist; and memo of Jan. 20, 1982 from Hazardous Waste Management Branch, California Department of Health Services, Sacramento, with Attachment. In addition, I have reviewed geologic conditions at and in the vicinity of the property as described in U. S. Geological Survey Professional Paper 334-H, "Geology of Southeastern Ventura Basin, Los Angeles County California, by E. L. Winterer and D. L. Durham (1962)." 65 (213) 249-0384

The present letter report is prepared at your request after evaluation of all information obtained from the foregoing.

Jim Jisa and I visited the following locations:

1. "Burn pit," where propellant is burned, without liner.
2. "Phosphorous sump," about 70,000 gal. capacity, with liner and dry box.
3. "Sump at 317," about 37,000 gal. capacity, with liner and dry box.

#### Geologic Characteristics

Hydrogeologic characteristics in the unsaturated and saturated zones must be considered in evaluating the potential for hazardous waste migration, according to the Attachment in the January 20 memo from the Department of Health Services.

The property is underlain principally by the Saugus Formation,



- 2 -

terrace deposits, and alluvium, according to U.S. Geological Survey Professional Paper 334-H. (The exact boundaries of the property are not known to the undersigned.) The Saugus Formation is composed of sandstone, conglomerate, and mudstone. Permeability to underground water and associated hazardous waste constituents would vary from moderate in the sandstone and conglomerate to low in the mudstone, in both the unsaturated and saturated zones.

Terrace deposits consist of clay, silt, sand, and gravel. The permeability would vary from low in the clay to high in the sand and gravel. Alluvial deposits are thin where present and insignificant in the areas of waste disposal.

A complication is the presence of the San Gabriel Fault, which apparently crosses the property according to USGSRP 334-H. However, this fault is not considered to be active.

#### Evaluation of Sumps

Both sumps have liners, under which is a drain leading to a dry box. According to Jim Jisa, there have been liner breaks. Unless the break occurred directly above the drain, the hazardous waste water would move essentially straight down until it met a bed of low permeability such as a clay or mudstone. A perched groundwater body is probably already present overlying this bed, as a result of natural infiltration of rainfall and stream flow. This groundwater is thus in the "uppermost aquifer" as stated in the Attachment, Health Services memo.

The waste water would then move down-gradient in that aquifer. In the case of both sumps, this would almost certainly be in a westerly direction.

#### Potential for Migration

The Attachment to the Health Services memo states: "All or part of the groundwater monitoring requirements of this document may be waived if the owner or operator can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells (domestic, industrial, or agricultural) or to surface water."

Locations of water supply wells were not checked in this investigation; however, the nearest ones are probably in the valley to the west, at least half a mile or more away. The rate of movement of waste water remaining underground could only be checked by a detailed investigation. This would include test holes to measure water levels and conduct pumping tests, from which permeability can be estimated, and chemical calculations and tests.

Unfortunately, however, there is almost certainly the potential for migration of hazardous waste or hazardous waste constituents from



- 3 -

the facility to surface water. A heavily vegetated areas is present approximately 300 feet down-valley to the west of the "phosphorous sump." According to Jim Jisa, a small "lake" is present in this area most of the year. Overflow from this lake moves down a tributary to the west to Placerita Creek and eventually to the Santa Clara River.

Analysis of hydrogeologic conditions indicates that any hazardous waste water from the lower sump can be expected to percolate to the first perched aquifer, and then move underground down the small valley to discharge into the lake. Natural discharge of groundwater in this manner keeps water in the lake.

#### Conclusions

1. A brief reconnaissance of the property and review of the literature indicate that any hazardous waste or hazardous waste constituents escaping from the "phosphorous sump" would move down to a shallow perched aquifer. From there movement would be down-gradient to the west. At least some of the waste water would discharge to surface water in a small lake existing much of the year.

2. A more complete hydrogeologic investigation, which would include test holes for water levels and pumping tests to determine permeability, could be undertaken to check this conclusion. Certain test holes might be located to function later as monitoring wells if necessary. However, since the results of a complete investigation would probably be negative as far as justifying a waiver on monitoring wells is concerned, such an investigation is not recommended.

Respectfully submitted,



Robert T. Bean  
Registered Geologist No. 1339  
Engineering Geologist No. 483

**EXHIBIT S**

MEMORANDUM

TO: File  
FROM: Christopher F. Thompson  
DATE: June 22, 1987  
RE: Meeting of June 17, 1987 with Gordon Louttit, Joe Alibrandi, John  
Peloquin, Glenn Abner and myself

The purpose of this meeting was to discuss the recently compiled estimated cost to complete closure for the Bermuda facility. This meeting took place both in the office and throughout the site. The meeting lasted from 8:30 a.m. until approximately 1:00 p.m. The net result of the meeting was that the total cost for the closure activities for all RCRA, non-RCRA and other projects was pared down from a recently estimated \$1.8 million to approximately \$636,000. An incentive program was proposed by Joe that, as he termed it, would be an incentive for us to complete the work within a certain time frame and within a certain budget. Many discussions were held concerning the extent of work that we have been proposing and are in the process of completing and that work felt necessary by Joe. Some specific comments from this meeting:

1. Joe feels it is not necessary to sift the landfills to the degree that we have been presently. He feels we should only remove the large, obvious materials and leave the others.
2. Joe feels that it is not necessary to remove the quantity of material that we have been removing from the different landfills. He feels that we should investigate with the backhoe the landfills the way in which we have been doing, take photographs of the material that is found, remove the main, large material and any drums or suspected hazardous material, take OVA readings of the backhoe pits that are dug and once all this is done, fill those holes back in and then leave the landfill as is. He feels that characterizing the landfills in this manner and then informing the buyer of the property of the existence of these landfills is the only work that is required on Whittaker's part. He feels that leaving the moving around of the landfill to the developer is the best way to not incur further costs with these landfills. He recognizes the fact that there could be problems associated with these landfills in the future and that Whittaker would have some liability. When asked about those possible costs, Joe felt certain that there will be some costs associated with these landfills at a later date, but did not seem too concerned about them. He did not seem concerned when told that the costs could run many times what they are at present.
3. Joe feels that it is quite probable to find a buyer willing to take on 50% of the potential liability associated with cleanup of contamination on-site.
4. Joe feels that a good faith effort to investigate possible landfill sites is to simply identify the site with backhoe trenches, take some OVA readings, remove large surface materials and then cover up those pits. Joe feels that there is no way to completely remove all wastes from the facility so why waste time or money getting any more of it (the wastes) out.

061691

Memorandum

Page Two

June 22, 1987

5. Joe made a comment to the effect: if he cannot sell the property because of a contamination problem, he will write off the loss and will the property to the EPA or maybe Tammy Bakker.
6. Joe feels very strongly that there were a number (maybe 20) oil wells drilled on the property and that the logs of those wells will be helpful to our work plan for 317 and 342. He believes that this information will save us time and money on this project. I told him I would check on the well logs and get back to him. I also told him that the work program is controlled by EPA and DOHS and we may have little to say about the number of holes drilled and the depths drilled to.
7. It was Joe's attitude that the disposal practices at Bermite for the last 80 years were no different than most other industries and, therefore, essentially they (the disposal practices) were okay. I sensed that he felt that Whittaker could not be held accountable for this past disposal and that it was, therefore, alright to have the purchaser of the property deal with the wastes or at least help pay the cost.
8. A very definite work plan was arrived at for each area already identified for further work. These were the areas indicated on the recently completed Estimated Expense to Complete Environmental Cleanup. Specific spending limits were put on each item.
9. A discussion was held concerning the cost to close the RCRA units. Joe felt that if we could, we should leave the demolition of the buildings to the purchaser of the property.

It was left that Joe would be putting together a specific program for completing the work which details the incentive plan Joe spoke of.

Respectfully submitted,



67-0022

**EXHIBIT T**

**CONFIDENTIAL – ATTORNEY-CLIENT PRIVILEGE  
ATTORNEY WORK PRODUCT**

# **Groundwater Regulation and Pollution Sources in Santa Clarita, 1987-1988**

**Prepared for:**

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July 2020





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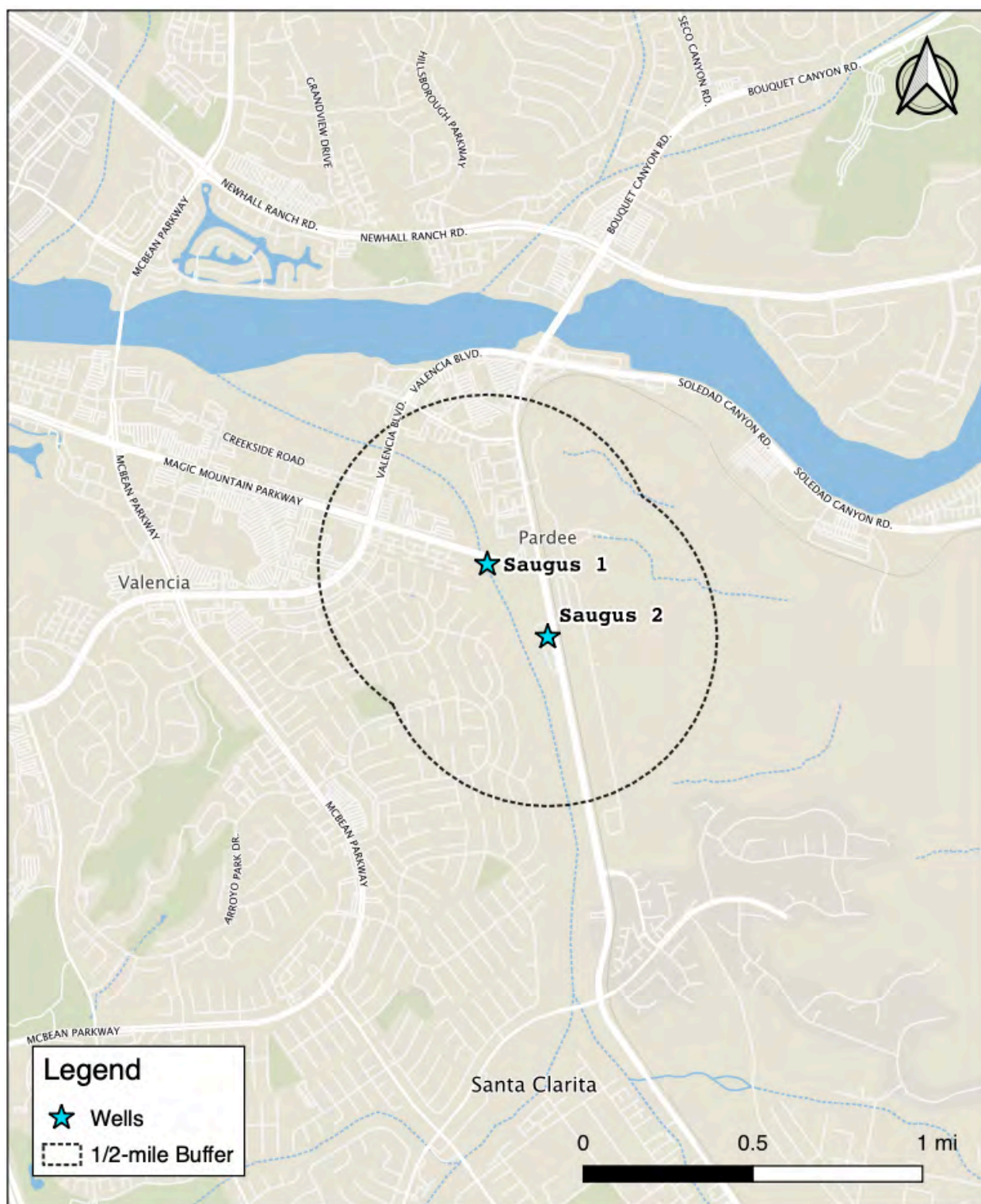
## Introduction

This report discusses the history of environmental regulation and pollution sources in the vicinity of groundwater wells Saugus-1 and Saugus-2 in Santa Clarita, California during the period January 1987 – June 1988 (hereafter the “period of interest”). These drinking water wells were constructed between June and September 1988 for Santa Clarita Water company, a predecessor company to the Santa Clarita Valley Water Agency, which is their current owner.

In December 1986 and again in February 1988, groundwater geologist Richard Slade identified recommended that local water companies investigate potential sources of groundwater contamination before siting drinking water wells. This report reconstructs what information the water companies might have found if they had followed Dr. Slade’s recommendations.

Part 1 of this report (Tabs 1-4) outlines Slade’s recommendations, and contextualizes them within the evolving regulatory environment for hazardous waste and groundwater management in California and Los Angeles County during the period of interest.

Part 2 of this report (Tabs 5-8) presents information about potential sources of groundwater pollution within 1/2-mile of wells Saugus-1 and Saugus-2 during the period of interest. The sources cited were published by regulators, agencies, or journalists, and would have been readily accessible to an interested researcher or member of the public.



**Overview Map Showing Wells Saugus-1 and Saugus-2**

## Part 1: Regulatory Context and Water Company Awareness of Groundwater Pollution Issues, 1969-1991

This section discusses the context for groundwater pollution investigations in the vicinity of wells Saugus-1 and Saugus-2, and highlights information that was known to legislators, regulators, and water companies. Tab 1 discusses Dr. Richard Slade's due diligence recommendations to local water districts in 1986 and 1988. Tab 2 provides an overview of the evolution of environmental regulations in California between 1949 and 1991, with specific attention to groundwater issues. Tab 3 examines planning and regulatory efforts in Los Angeles County, and Tab 4 provides examples of the involvement of local water companies in groundwater testing and groundwater pollution cases during and immediately prior to the period of interest.

### Tab 1: Richard Slade's 1986 and 1988 Hydrogeological Investigations and Recommendations to Water Companies

In December 1986 and February 1988, a consortium of local water agencies in the Santa Clara River Valley hired groundwater geologist Dr. Richard Slade to evaluate the groundwater potential of the Saugus Formation, a deep, highly permeable alluvium which underlays most of the Santa Clara River Valley. Slade noted that the Saugus Formation had potential to supply groundwater, but that its high permeability made it susceptible to contamination from industrial facilities, oil wells, and other polluters. In both reports, he recommended that the water companies prepare research on potential pollution sources before siting groundwater wells:

Because of the propensity of the alluvium to be easily contaminated, become cognizant of present and future land use in and along the alluvium; work with the RWQCB [Regional Water Quality Control Board] to recognize landfill problems, runoff from hazardous waste sites, and even migration of gasoline from leaky underground service station tanks. Such potential sources of contamination can adversely affect the alluvium and the surface exposures of the Saugus Formation. Locate all industrial dischargers on a map and determine the types and amounts of such discharges (December 1986, p.113; February 1988, p.103).

#### Documents in this Tab

Dr. Richard Slade, *Hydrogeologic Investigation of Perennial Yield and Artificial Recharge Potential of the Alluvial Sediments in the Santa Clara Valley of Los Angeles County California*, December 1986.

Dr. Richard Slade, *Hydrogeologic Assessment of the Saugus Formation in the Santa Clara Valley of Los Angeles County California*, February 1988.

## Tab 2: Groundwater Regulation in California up to 1990

Documents in this tab provide an overview of the evolution of groundwater regulation and enforcement in California to 1991. Protection of water resources by California's state government began with the Dickey Water Pollution Act of 1949, which established the State Water Pollution Control Board and the Regional Water Pollution Control Boards, which were renamed the California State Water Resources Control Board [SWRCB] and Regional Water Quality Control Boards [RWQCB] in 1967. In 1969, the Porter-Cologne Water Quality Control Act gave the RWQCBs extensive enforcement and regulatory powers.

The California Hazardous Waste Control Act of 1972 gave the State Department of Health Services (DHS) the authority to regulate toxic substances, and new regulations enacted in 1973 defined hazardous wastes, outlined appropriate handling measures, and established a tracking system for hazardous waste transportation. The Hazardous Waste Management Unit of DHS was elevated to the status of a departmental Branch in 1980, and became the Toxic Substances Control Program (TSCP) in 1981. The TSCP established an enforcement program in 1976, which was supplemented by the Criminal Investigations Program in 1986. In 1991, the TSCP was reorganized as the Department of Toxic Substances Control within the newly-formed California EPA.

In mid-1985 the DHS and SWRCB established a joint task force to establish procedures for field analysis of leaking underground storage tanks. During the period of interest, investigation and enforcement of toxic substances which might enter groundwater was undertaken jointly by two State agencies: the TSCP (within DHS) and the RWQCBs.

Important legislation immediately prior to the period of interest included:

- *Assembly Bill [AB] 2013 (Cortese)* and *AB 1362 (Sher)* established regulation of underground storage tanks (USTs) after passage in 1983. These bills required, respectively, a hazardous substance storage statement and permit in order to operate a UST, and installation of monitoring systems for new tanks.
- *The California Superfund Act* (Proposition 27) was enacted by voters in 1984. The Superfund Act created a list of priority cleanup sites – including four in the Santa Clarita valley – and provided \$100 million in bond money to assist in cleanup.
- *The Safe Drinking Water and Toxic Enforcement Act* (Proposition 65) was enacted by voters in 1986. Proposition 65 sought to protect drinking water sources from toxic substances, to inform the public about potential exposures to toxic chemicals, to promote enforcement of hazardous waste laws, and to shift cleanup costs to polluters.

### Documents in this Tab

Cal-EPA, *History of the California Environmental Protection Agency*, 2001.

State Water Resources Control Board, “History of the Water Boards”, 2018. Available at:

[https://www.waterboards.ca.gov/about\\_us/water\\_boards\\_structure/history.html](https://www.waterboards.ca.gov/about_us/water_boards_structure/history.html)

State Water Resources Control Board, “History of Water Policy”, 2018. Available at:

[https://www.waterboards.ca.gov/about\\_us/water\\_boards\\_structure/history\\_water\\_policy.html](https://www.waterboards.ca.gov/about_us/water_boards_structure/history_water_policy.html)



### Tab 3: Planning and Local Regulations, 1975-1990

Regional planning efforts for the Santa Clara River watershed began in the early 1970s, when the Department of Water Resources commissioned a study of potential water quality problems in the Santa Clara River Basin. This effort led to the publication of the first *Water Quality Control Plan for the Santa Clara River Basin* by the Los Angeles Region RWQCB in 1975 (later updated in 1978, 1990, and 1991). The 1975 report noted the high permeability of the Saugus formation which underlies much of the valley, and outlines water quality goals for groundwater, but does not explicitly discuss pollution.

In December 1983, Los Angeles County passed an ordinance regulating underground storage tanks (USTs) throughout the county. The ordinance required permits for new USTs and mandated the use of double-walled tanks and leak monitoring systems. A *Newhall Signal* article from December 23, 1983 identified gasoline storage tanks a major source of groundwater pollution.

The County's effort was paralleled by the Los Angeles RWQCB, which prepared a draft work plan for addressing potential UST threats to groundwater in the region in late 1983, as described in Water Quality Order 84-1.

In 1984, the first Santa Clarita Valley Area Plan was adopted by Los Angeles County. The plan considered water quality issues in its environmental resources management element, and set goals to:

- “Protect the viability of surface water, since it provides a habitat for fish and other water-related organisms, as well as being an important environmental component for land-based plants and animals” (p.25)
- “Carefully consider, in all governmental and private actions related to sewage and solid waste disposal, the potential effects on local groundwater quality” (p.26)

By the end of 1984, the SWRCB had produced its first draft statewide groundwater toxics plan, as reported in the *Newhall Signal* on December 28.

#### Documents in this Tab

Regional Water Quality Control Board, Los Angeles Region, *Water Quality Control Plan for Santa Clara River Basin (4A)*, March 1975.

“County Will Regulate Underground Chemicals,” *Newhall Signal*, December 23, 1983, p.1.

Regional Water Quality Control Board, Los Angeles Region, *Order No. 84-1: In the matter of the petition of Citizens for a Better Environment*. On file, Los Angeles RWQCB.

Los Angeles County Department of Regional Planning, *Santa Clarita Area Plan*. Adopted February 1984, updated December 1990.

“Plan to Protect Water,” *Newhall Signal*, December 28, 1984, p.14.



#### **Tab 4: Local Water Agencies' Awareness of Groundwater Pollution Issues, 1979-1987**

The Santa Clarita Valley Water Agency (also known as SCV Water) was formed in 2018 from a merger between Newhall County Water District (formed 1953), Valencia Water Company (formed 1954), and the Santa Clarita Water Company (formed 1973). The Castaic Lake Water Company acquired Santa Clarita Water Company in 1999 and was part of the merger to form SCV Water. Richard Slade's 1986 and 1988 reports (see Tab 1) were addressed to the Upper Santa Clara Water Committee, which included all four of these entities.

From at least 1979, local water companies were aware of the potential for groundwater pollution in the Santa Clarita Valley. In August 1979, the *Newhall Signal* reported that Valencia Water Company had hired a geologist to consider the potential impacts to groundwater from the proposed hazardous waste disposal site in Sand Canyon. Newhall County Water District and Santa Clarita Valley Water Company, for their parts, had already made public statements in opposition to the project because of concerns that it would impact the quality of drinking water wells. In October 1979, the SWRCB stated that the proposed Sand Canyon site was not suitable for hazardous waste disposal because of the potential to contaminate the watershed of the Santa Clara River.

In July 1980, the *Newhall Signal* published a profile of hazardous waste issues at the Lubrication Company of America refinery, located adjacent to the Santa Clara River east of Saugus. The general manager of the Newhall County Water District, Jim Jinks, was quoted as saying "the place is a mess" and that "the Newhall County Water District is concerned... We are worried about wash out from the refinery to our wells... we aren't in the business of gambling with drinking water." Jinks had filed a prior complaint about the refinery with Los Angeles County in 1979.

The publication of the first State Superfund list in early 1985 was covered extensively in local media. The list included four sites in the Santa Clarita Valley, including Thatcher Glass Company (located near wells Saugus-1 and Saugus-2; see Tab 5 below), Lubrication Company of America (noted above), and Space Ordinance Systems' two facilities at Mint Canyon and Sand Canyon. A January 16, 1985 article in the *Newhall Signal* notes that the Newhall County Water District, Valencia Water District, and Santa Clarita Water Company were all aware of the potential threat to groundwater from these four sites. In response, Newhall County Water District had tested its drinking water wells downstream but did not find contaminants. Valencia Water Company and the Santa Clarita Water Company had prepared groundwater testing plans and submitted them for approval by the state, while Newhall Water Company's testing plan had already been approved.<sup>1</sup>

Local water companies' plans for groundwater testing were also mentioned in February 1985, when an article in the *Signal's* weekend magazine listed recent spills of toxics and local Superfund sites, noting that "water companies will be looking to see if any of the chemicals show up in wells in the future".

Ongoing efforts to site a regional toxic waste dump in the Santa Clarita Valley continued in 1986, when the *Los Angeles Times* reported on soil studies for two proposed dump sites. Engineers found that the porous ground below the proposed Valencia location made siting a toxic waste dump on

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<sup>1</sup> Due to the closure of agency archives and public libraries during the COVID-19 pandemic, it was not possible to find further evidence of these testing plans. It is hoped that these documents can be identified before depositions are taken in this case.

that location potentially hazardous to groundwater.

Other groundwater contamination news during the period of interest included two late 1987 articles in the *Signal* about groundwater pollution. In September 1987, TCE and 1,1-DCE contamination to groundwater was reported at the HR Textron plant in Valencia. Valencia Water Company was approached for comment, and stated that they had no drinking water wells in the area. In December 1987, Newhall County Water District reported that analysis of water from their wells in the Pinetree area showed contamination with TCE, and requested that the Planning Commission require an Environmental Impact Report for the Curtis Sand and Gravel Company operations, which were upgradient from the wells.

#### Documents in this Tab

Castaic Lake Water Agency, “Overview of the Santa Clarita Water Division,” August 2012.

Available at: [https://scvhistory.com/scvhistory/clwa\\_scwd\\_2012.htm](https://scvhistory.com/scvhistory/clwa_scwd_2012.htm)

SCV Water, “Our History,” 2020. Available at: <https://yourscvwater.com/history/>

“Geologist to Study Waste Site,” *Newhall Signal*, August 12, 1979, p.1

“Solid Waste Hearing Tomorrow,” *Newhall Signal*, August 12, 1979, p.1

“Study Concludes: No Place for Waste,” *Newhall Signal*, October 7, 1979, p.1

“Waste Problem at River’s Edge,” *Newhall Signal*, July 2, 1980, p.1

“Four Local Sites Make Toxic List,” *Newhall Signal*, January 16, 1985, p.1

“Bhopal is Just a Spill Away,” *Progress 1985 Magazine*, February 17, 1985, p.60-63

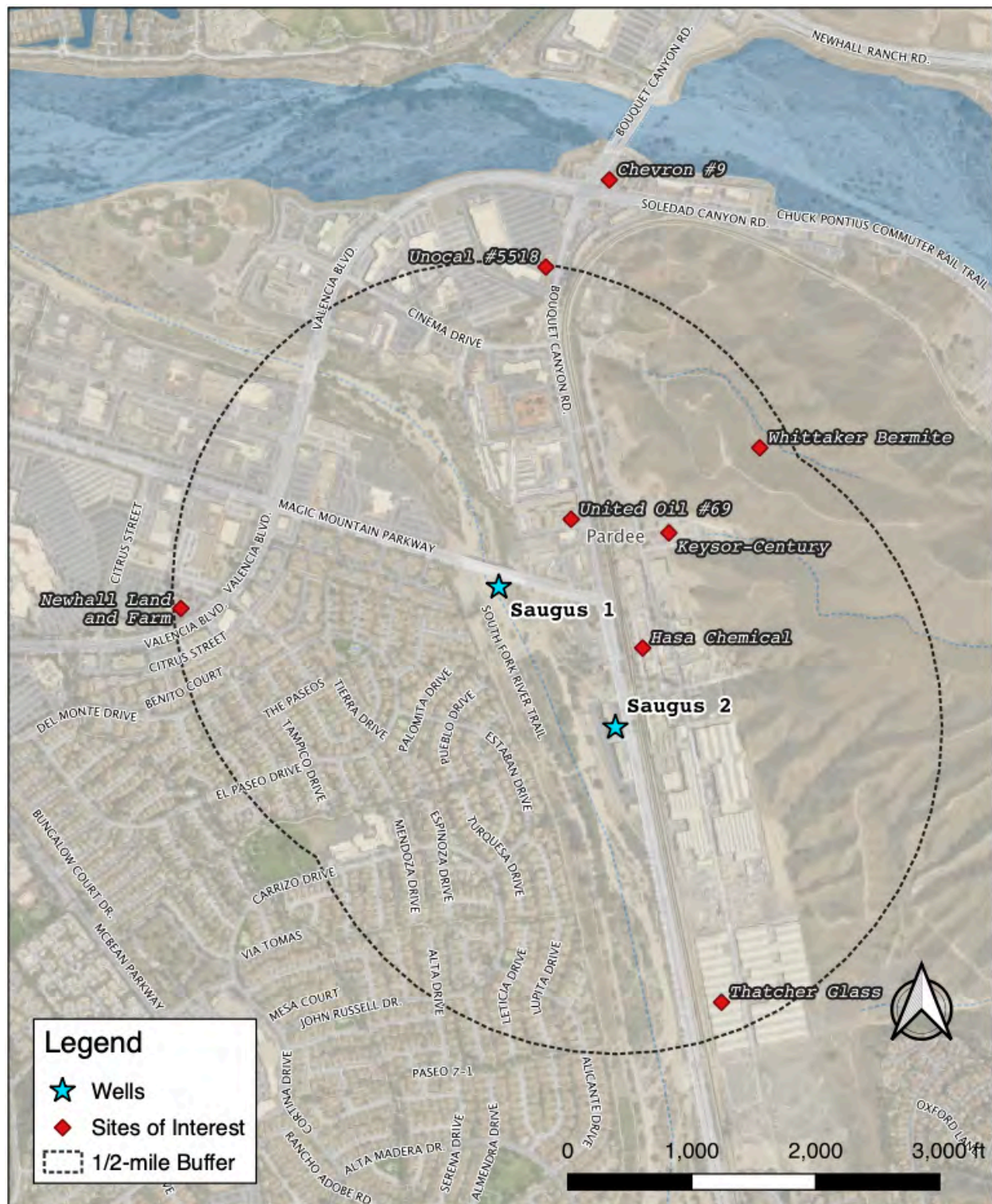
“2 Sites Short of Ideal for Toxic Dumping,” *Los Angeles Times*, November 8, 1986, p. F-9.

“HR Textron Tanks Contaminate Groundwater,” *Newhall Signal*, September 11, 1987, p.9

“Pinetree Wells Raise Planning Questions,” *Newhall Signal*, December 13, 1987, p.26

## **Part 2: Individual Sites with Active Pollution Investigations During the Period of Interest**

Public records show that at least 8 facilities within approximately 1/2-mile of the Saugus-1 and Saugus-2 wells were investigated for potential groundwater pollution during the period of interest. One of these, Thatcher Glass, was named a state Superfund site in 1984. For Thatcher Glass, Keysor-Century, and Whittaker Bermite, local news coverage indicates that a regular reader of local newspapers would have been aware of potential pollution at these sites. For the other sites, Geotracker and Envirostor records indicate that underground storage tank leaks were known to regulators during the period of interest.



**Sites of Interest Near Wells Saugus-1 and Saugus-2, 1987-1988**



## Tab 5: Thatcher Glass Company

Thatcher Glass Company was located at 25655 Springbrook Road, about 3500 feet south of Saugus-1 and 200 feet south of Saugus-2. The company manufactured and processed glass and related products at the facility between 1957 and 1987. In January 1985, Thatcher Glass was one of the first sites to be placed on the State Superfund list “because of the potential danger they pose to ground water.” As the *Newhall Signal* reported:

The potential health problems the health department has attributed to the Thatcher site, which is located at 25655 Springbrook Road, in Saugus, arise from caustic solutions and chromium that are used at the plant, as well as oil- and grease-contaminated liquids that were spilled at the site... the most recent documentation of hazardous materials spills at the plant are from the 1970s. There could have been others before that, [the DHS spokeswoman] said, and they might have contaminated the ground water. The ground water at the plant is only 10 feet beneath the surface, she said.

Asked in the same article about the potential threats to drinking water wells, Bill Manetta, President of Santa Clarita Water Company, noted that “Santa Clarita Water Company had wells in the vicinity of Thatcher Glass... But those wells were abandoned no later than 1972.”

In February 1986, a spill of a corrosive “green sludge” at Thatcher required the evacuation of the plant and nearby businesses, and was the first call to the Los Angeles County Sheriff’s new Hazardous Materials Response Team, which had been established that month. The responders were concerned that spilled material might have entered sewers, though it did not.

Thatcher Glass Company was finalizing an agreement with DHS for cleanup of its Saugus plant in July 1987. At that time the site was number 50 on the state priority list, and contained an estimated 11,667 cubic yards of contaminated soil. A *Newhall Signal* article from July 26, 1987 noted that “according to documents obtained under the California Public Records Act, concerns that Thatcher Glass is a threat to the area’s groundwater supply dates back 30 years.” According to the article, the Los Angeles County Flood Control District had received complaints as early as 1957 that private wells within ½-mile of Thatcher Glass were contaminated with industrial waste. In 1985, “DHS associate engineering geologist Larry Peterson reported... that contaminants originating at Thatcher ‘could easily reach’ a groundwater basin from which Valencia Water Company draws water.”

The 1997 Voluntary Cleanup Agreement for the site notes that a closure plan was approved by DTSC in January 1989, which suggests that it was under development during the period of interest.

In the period of interest, then, Thatcher Glass Company was engaged in a widely-publicized toxics cleanup effort with known discharges of chemicals to soil and potentially to groundwater.

Documents in this Tab

Envirostor Case Summary for Thatcher Glass, 25655 Springbrook Avenue, Saugus

“Four Local Sites Make Toxic List,” *Newhall Signal*, January 16, 1985, p.1

“County to Analyze Spill at Thatcher,” *Newhall Signal*, February 9, 1986, p.1

“Cleanup of Plant Waste to Begin,” *Newhall Signal*, July 26, 1987, p.1

Voluntary Cleanup Agreement for Thatcher Glass Manufacturing Facility, 1997

DTSC Closure Certification Acknowledgement, 1995

## Tab 6: Keysor-Century Corporation

Keysor-Century Corporation, located at 26000 Springbrook Avenue, Saugus, was a manufacturer of polyvinyl chloride (PVC) resin compounds from 1958 until 2003. The facility used chemicals including vinyl chloride, vinyl acetate monomers, TCE, toluene, and 1,2-DCA. It is located approximately 1400 feet east of Saugus-1 and 1600 feet north of Saugus-2.

Information about site history is summarized in a 2006 Site Inspection Report. Plant wastes were discharged to an unlined pond from 1958 until 1977. In 1977, Keysor-Century received a National Pollutant Discharge Elimination System permit from the Los Angeles RWQCB. In May 1984, TSCD completed a preliminary assessment summary for the site, recommending further investigation “with an emphasis on the impact of toxic materials on the site and their possible migration to groundwater.” (p.7) Continued discharges, however, led the EPA to commission a field investigation of the site in August of 1988.

Newspaper articles also highlighted potential pollution issues at the Keysor-Century facility during the period of interest. In 1987, a fire at the Keysor-Century plant led to the evacuation of 200 people in an adjoining neighborhood due to concern that toxic vinyl chloride gas might be emitted. Firefighters tested runoff from water used in the firefighting and found it to contain small amounts of vinyl acetate, “considered a mild toxin.”

Further concerns about toxic chemicals at the Keysor-Century plant were expressed in October 1987, when the *Signal* reported on storage of toxic vinyl chloride in tank cars on a siding near the plant.

### Documents in this Tab

Envirostor Case Summary for Keysor-Century Corporation, 26000 Springbrook Avenue, Saugus  
Weston Solutions, Inc., *Expanded Site Inspection Report for Keysor-Century Corporation, Saugus, CA*,  
January 2006.

“Keysor-Century Fire: Evacuees Return, Neighbors Unhurt,” *Newhall Signal*, April 29, 1987, p.1

“Railroad Cars Routinely Park Here With Toxic Materials,” *Newhall Signal*, October 25, 1987,  
p.2



## Tab 7: Whittaker Bermite

Whittaker Bermite Corporation manufactured ammunition, rockets, fireworks, flares, and other explosives from 1934 to its closure in 1987. The site extended over 1,000 acres east of wells Saugus-1 and Saugus-2. The western edge of the Bermite property is located approximately 2000 feet east of Saugus-1 and 1500 feet east of Saugus-2.

A Consent Order from 2003 outlines the enforcement history of the property, noting that DHS issued an Interim Status Document in 1981, and a closure plan for the property was approved by US EPA in September 1987, during the period of interest. Whittaker also submitted multiple reports to DTSC and USEPA over the course of 1988, which identified distinct Solid Waste Management Units at the property.

The *Newhall Signal* and *Los Angeles Times* reported extensively on the Whittaker Bermite case; two representative articles are reproduced in this tab. Public hearings related to the Whittaker Bermite closure plan were held in September 1987, as reported in the *Newhall Signal*. The article notes that soil contamination at the site extended as deep as 100 to 130 feet under the surface. In mid-1989, the *Los Angeles Times* reported that ongoing testing at the Bermite site found TCE contamination in wells as much as 600 feet deep. This illustrates that the potential impacts to groundwater from the Whittaker Bermite facility were known to the public during the period of interest and shortly thereafter.

### Documents in this Tab

*Enforceable Agreement in the Matter of the Former Whittaker-Bermite Facility, 2216 West Soledad Canyon Road, Santa Clarita, 2001*

“Bermite Hearing Provides No Answers,” *Newhall Signal*, September 13, 1987, p.22

“Pollution Found in Well at Bermite Plant Site,” *Los Angeles Times*, June 29, 1989, p.9

## **Tab 8: Leaking Underground Storage Tanks Near Wells Saugus-1 and Saugus-2**

Review of Geotracker and Envirostor databases identified five other facilities within ½-mile of Saugus 1 and Saugus 2 which reported leaking underground storage tanks and/or chemical spills in or around the period of interest.

### **United Station #69, 26015 Bouquet Canyon Rd**

This facility is located approximately 750 feet northeast of Saugus-1 and 1700 feet north of Saugus-2.

A gasoline station was present at this address by 1969, when the City Directory lists a Mohawk Service Station at this address. A 2005 report by Frey Environmental discusses the history of the site. In September 1986, soil samples from the site (then a Texaco station) indicated petroleum hydrocarbons to a depth of at least 20 feet in site soil. The station was closed in 1987 and the USTs removed. In June 1987, a soil vapor extraction system was installed in the former UST pit area to reduce soil hydrocarbons. An estimated 2,024 pounds of hydrocarbons were estimated to have been vented from the soil between 1989 and 1991.

### **Hasa Chemical, Inc, 23119 Drayton St**

This facility is located approximately 1250 feet southeast of Saugus-1 and 600 feet northeast of Saugus-2.

Hasa Chemical is a supplier of sanitation and pool supply chemicals. Geotracker records indicate that a leaking UST was discovered in September 1984 at this facility, but no further documents were available.

In June 1988, the *Newhall Signal* profiled Hasa President Don Wilson, and noted that Los Angeles County had required Hasa to remove underground storage tanks for fear of chemical leakage.

### **Chevron #9 – 23055 Soledad Canyon Road**

This facility is located approximately 3300 feet north of Saugus-1 and 4500 feet north of Saugus-2, slightly outside the ½-mile radius.

Geotracker records indicate that a leaking UST was discovered at this address in August 1987, but no further documents were available for this site.

### **Newhall Land and Farm Co, 23823 Valencia Blvd**

This facility is located approximately 2500 feet west of Saugus-1 and 3600 feet northwest of Saugus-2.

A Geotracker case summary for this site indicates that a UST leak was reported in 1965 for this service station, but no other information is available for this case. The site has been under remediation since 1992.

### **Unocal #5518, 26279 Bouquet Canyon Road**

This facility is located approximately 2500 feet north of Saugus-1 and 3700 feet north of Saugus-2.

Geotracker records indicate that a leaking UST was reported at this address in March 1986, but no further documents were available for this site.

Documents in this Tab

Frey Environmental, *Additional Subsurface Soil Investigation and Installation of Additional Groundwater Monitoring Wells, United Oil Company Station #69*, November 2005

Envirostor Case Summary for Hasa Chemical, 23119 Drayton Street

“Wilson: Bounces Back After Being Fired,” *Newhall Signal* June 26, 1988, p.23

Envirostor Case Summary for Chevron #9, 23055 Soledad Canyon Road

Envirostor Case Summary for Newhall Land and Farm Co, 23823 Valencia Blvd

Envirostor Case Summary for Unocal #5518, 26279 Bouquet Canyon Road

**EXHIBIT U**

**ARCHAEOLOGICAL/HISTORICAL CONSULTANTS****STATEMENT OF QUALIFICATIONS****DR. DANIEL SHOUP****About**

Dr. Daniel Shoup holds a Master's of Urban Planning (with an concentration in Environmental Planning) and a PhD in Classical Archaeology, both from the University of Michigan. Dr. Shoup has been Principal of Archaeological/Historical Consultants since 2013. His 15 years of experience include cultural resources studies for CEQA and NEPA compliance, and forensic historical research to identify historic sources of soil and groundwater pollution. In addition, Dr. Shoup is the author of ten peer-reviewed academic publications on cultural heritage management in Italy and Turkey.

**Academic Publications since 2010**

- 2019 Zan, Luca and Daniel Shoup. "Professional Utopianism and Administrative Naivet  . Uncertainty and Archaeology in the Shipwrecks of Pisa." In Neil Silberman and Angela Labrador, eds., Oxford Handbook of Public Heritage Theory and Method (New York: Oxford University Press).
- 2019 Bonini Baraldi, Sara and Daniel Shoup. "When Megaprojects Meet Archaeology: A Research Framework and Case Study from Yenikapi, Istanbul." International Journal of Cultural Policy 25(4), pp.423-444. DOI: 10.1080/10286632.2017.1343307
- 2015 Co-Author, Managing Cultural Heritage: An International Research Perspective (New York: Ashgate). ISBN 1317101804.
- 2015 Maria Lusiani, Daniel Shoup and Luca Zan. "Planning: An Effective Instrument for Change?" In Luca Zan et al., Managing Cultural Heritage: an International Research Perspective. New York: Ashgate, pp.97-104.
- 2014 Bonini Baraldi, Sara and Daniel David Shoup. "Heritage Management at the Local Level: Rhetoric and Results in the Case of Gaziantep, Turkey. International Journal of Cultural Policy. DOI:10.1080/10286632.2013.874419
- 2013 Shoup, Daniel David and Luca Zan. "Byzantine Planning: Site Management in Istanbul." Conservation and Management of Archaeological Sites 15(2) 169  194.
- 2013 Bonini Baraldi, Sara, Daniel David Shoup, and Luca Zan "Understanding Cultural Heritage in Turkey: Institutional Context and Organizational Issues." International Journal of Heritage Studies 19 (7) 728-748. DOI:10.1080/13527258.2012.700283.
- 2012 Shoup, Daniel David, Sara Bonini Baraldi, and Luca Zan. "A Centralized Decentralization: Outsourcing in Turkey's Heritage Sector." International Journal of Cultural Policy. DOI:10.1080/10286632.2012.731051

**ARCHAEOLOGICAL/HISTORICAL CONSULTANTS**

---

609 Aileen Street  
Oakland, CA 94609  
(510) 654-8635  
info@ahc-heritage.com  
www.ahc-heritage.com

**Previous Depositions and Testimony**

Dr. Shoup has not previously been deposed or testified as an expert witness.

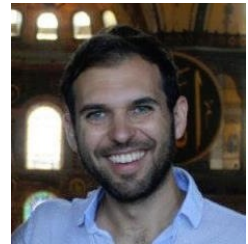
**Billing Rate**

Dr. Shoup's 2020 billing rate is \$136.50 per hour. His 2021 billing rate will be \$141.75 per hour.





**DANIEL DAVID SHOUP**  
Principal  
daniel.shoup@ahc-heritage.com



## Employment

|           |  |
|-----------|--|
| Current   | Principal, Archaeological/Historical Consultants                         |
| 2013-2016 | Associate Principal, Archaeological/Historical Consultants               |
| 2010-2013 | Postdoctoral Researcher, Department of Management, University of Bologna |
| 1998-2000 | Staff Archaeologist, URS Corporation, Oakland, California                |

## Education

|      |   |
|------|---|
| 2008 | <i>PhD Classical Art and Archaeology</i> , University of Michigan     |
| 2006 | <i>Master of Urban and Regional Planning</i> , University of Michigan |
| 1998 | <i>BA Literature</i> , University of California at Santa Cruz         |

## About

Daniel Shoup is an archaeologist and environmental historian who has been Principal of A/HC since 2013. His 15 years of experience in California include cultural resources studies for CEQA and NEPA compliance, and forensic historical research to identify historic sources of soil and groundwater pollution. In addition, Dr. Shoup is the author of ten peer-reviewed academic publications on cultural heritage management.

## Selected Cultural Resources Reports

- 2019 I-680 Express Lanes Project, Pleasanton, Alameda County. Cultural resources lead for road-widening project including archaeological survey, geoarchaeological analysis, historic structures evaluation, and archaeological testing. For AECOM/Alameda County Transportation Commission.
- 2017 Archaeological Investigations at 45 North San Pedro Street, San José. Directed archaeological testing, historic architectural evaluation, and mitigation excavations at an historic adobe site in downtown San José. For Mill Creek Residential.
- 2017 Highway 84 / I-680 Improvements Project, Sunol, Alameda County. Cultural resources lead for road-widening project including archaeological survey, geoarchaeological analysis, historic structures evaluation, and archaeological testing.
- 2017 North Beach Historic Land Use Study. Forensic historical analysis of a 20-block area in the North Beach district of San Francisco, including reconstruction of historic shorelines, identification of historic industrial uses, and detailed histories of potential pollution sources for a private client.
- 2017 Archaeological Investigation Report, Urban Tilth North Richmond Farm Project, North Richmond, Contra Costa County, CA. Archaeological testing, historical research, sensitivity map, and CEQA compliance for an proposed urban farm project located on a Ohlone shellmound site. For Urban Tilth, Richmond, CA.
- 2015 Historic Resources Evaluation, Camp Bertha, Alameda County, CA. Historic context statement and evaluation of a hunting camp belonging to Hayward rodeo magnate Harry Rowell. For East Bay Regional Park District, Oakland.
- 2013 Historic Land Use study of Butchertown. Forensic historical analysis of potential pollution sources in the former Butchertown district, south of Islais Creek between Toland Street and Hunter's Point. For a private client.
- 2012 Historic American Engineering Record for Florence Lake Dam and Bear Diversion, Fresno County. For Southern California Edison Company.
- 2010 Historic American Engineering Record of Big Creek Powerhouses 1, 2, 2A, 3, and 8, Fresno County. For Southern California Edison Company.
- 2008 Historic American Building Survey of the Hunter's Point Power Plant Unit 1, San Francisco, California. Pacific Gas and Electric Company.

**DANIEL DAVID SHOUP**

Principal

daniel.shoup@ahc-heritage.com



### Academic Publications

- 2019 Zan, Luca and Daniel Shoup. "Professional Utopianism and Administrative Naivet . Uncertainty and Archaeology in the Shipwrecks of Pisa." In Neil Silberman and Angela Labrador, eds., *Oxford Handbook of Public Heritage Theory and Method* (New York: Oxford University Press).
- 2019 Bonini Baraldi, Sara and Daniel Shoup. "When Megaprojects Meet Archaeology: A Research Framework and Case Study from Yenikapi, Istanbul." *International Journal of Cultural Policy* 25(4), pp.423-444. DOI: 10.1080/10286632.2017.1343307
- 2015 Co-Author, *Managing Cultural Heritage: An International Research Perspective* (New York: Ashgate). ISBN 1317101804.
- 2015 Maria Lusiani, Daniel Shoup and Luca Zan. "Planning: An Effective Instrument for Change?" In Luca Zan et al., *Managing Cultural Heritage: an International Research Perspective*. New York: Ashgate, pp.97-104.
- 2014 Bonini Baraldi, Sara and Daniel David Shoup. "Heritage Management at the Local Level: Rhetoric and Results in the Case of Gaziantep, Turkey. *International Journal of Cultural Policy*. DOI:10.1080/10286632.2013.874419
- 2013 Shoup, Daniel David and Luca Zan. "Byzantine Planning: Site Management in Istanbul." *Conservation and Management of Archaeological Sites* 15(2) 169-194.
- 2013 Bonini Baraldi, Sara, Daniel David Shoup, and Luca Zan "Understanding Cultural Heritage in Turkey: Institutional Context and Organizational Issues." *International Journal of Heritage Studies* 19 (7) 728-748. DOI:10.1080/13527258.2012.700283.
- 2012 Shoup, Daniel David, Sara Bonini Baraldi, and Luca Zan. "A Centralized Decentralization: Outsourcing in Turkey's Heritage Sector." *International Journal of Cultural Policy*. DOI:10.1080/10286632.2012.731051
- 2008 Shoup, Daniel D and Lyra Monteiro. "When Past and Present Collide: the Ethics of Stewardship." *Current Anthropology* 49(2):328-333. <http://www.jstor.org/stable/10.1086/524385>
- 2006 Shoup, Daniel D. "Can Archaeology Build a Dam? Sites and Politics in Turkey's Southeast Anatolia Project." *Journal of Mediterranean Archaeology* 19(2):231-268. <http://www.equinoxpub.com/JMA/article/view/3191>

**EXHIBIT V**

**DEPARTMENT OF TOXIC SUBSTANCES CONTROL**  
**ENVIROSTOR**[Tools](#)[Reports](#)[Community Involvement](#)[How to Use EnviroStor](#)[ESI](#)[DTSC Web](#)**THATCHER GLASS MANUFACTURING COMPANY (19320186)**[SIGN UP FOR EMAIL ALERTS](#)

25655 SPRINGBROOK AVENUE  
SAUGUS, CA 91350  
LOS ANGELES COUNTY  
**SITE TYPE:** VOLUNTARY CLEANUP

**SUPERVISOR:** ALLAN PLAZA  
**OFFICE:** CLEANUP CHATSWORTH  
**CENSUS TRACT:** 6037920314  
**CALENVIROSCREEN PERCENTILE SCORE:** 21-25%

[Summary](#) | [Activities](#) | [Site/Facility Docs](#) | [Map](#) | [Related Sites](#) | [CalEnviroScreen](#)**Site Information****CLEANUP STATUS**

NO FURTHER ACTION AS OF 1/25/2002

**SITE TYPE:** VOLUNTARY CLEANUP

**NATIONAL PRIORITIES LIST:** NO

**ACRES:** 1.5 ACRES

**APN:** 2836-006-040, 2836-007-028, 2836-007-042, 2836006040, 2836007028, 2836007042

**CLEANUP OVERSIGHT AGENCIES:**

DTSC - SITE CLEANUP PROGRAM - **LEAD AGENCY**

**ENVIROSTOR ID:** 19320186

**SITE CODE:** 300157

**SPECIAL PROGRAM:** VOLUNTARY CLEANUP PROGRAM

**FUNDING:** SITE PROPONENT

**ASSEMBLY DISTRICT:** 38

**SENATE DISTRICT:** 21

**Regulatory Profile****PAST USE(S) THAT CAUSED CONTAMINATION**

MANUFACTURING - OTHER

**POTENTIAL CONTAMINANTS OF CONCERN**

CHROMIUM VI

POLYCHLORINATED BIPHENYLS (PCBS)

[UNCATEGORIZED](#)

**POTENTIAL MEDIA AFFECTED**

OTHER GROUNDWATER AFFECTED (USES OTHER THAN DRINKING WATER), SOIL, SOIL VAPOR,  
SURFACE WATER AFFECTED

**Site History**

OWNER: UNTIL 1982 THATCHER GLASS CORP - SUBSIDIARY OF DART INDUSTRIES FAC TYPE: T/C WITH M SULLIVAN, ENVR, (805)259-4400, 5/4/84 - 1 RECIRCULATION POND FOR OIL, 2 PONDS FOR WATER CONTAIN- ING CR, SLUDGE POND, BAGHOUSE. PERMIT: 7/12/54 SPECIAL COND'N #1229. 3/12/79 NPDES, PERMIT, ORDER NO. 79-51. HAZ WASTE - RELATED PROBLEM - 1)DISCH OF COOLING WATER & REGENERATION SALT RINES TO GROUND & DRY WELLS. 2) DISCH OF SOLU- BLE OILS (20 BBL/M) FROM 1957-65 ON SITE SMALL QUANTITY DISCHARGE THROUGHOUT THE 1970'S. 3) DISCH OF CAUSTIC RINSE WATER (1500 LB/M IN 1957). 4) PROBLEM WITH PCB SINCE 1980. SOURCE ACTIV: USE SAND, SADA ASH, LIME STONE FOR GLASS MFG PROD BOTTLES YR OF OPER: 1956 TO PRESENT ENF HISTORY: 1980 ONGOING INVEST BY CO SANIT FOR PCBs FROM COMPRESSOR BLOWDOWN WASTEWATER. NOT RESOLVED YET. ABOUT 10 INSP, 3 VIOS, 5 INCIDENTS FORM 5/5/84 TO 12/15/84. SUBMIT TO EPA PRELIM ASSESS DONE RCRA 3012

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1.90625 seconds



**EXHIBIT W**

## DEPARTMENT OF TOXIC SUBSTANCES CONTROL

400 P STREET, 4TH FLOOR  
P.O. BOX 806  
SACRAMENTO, CA 95812-0806



(916) 324-3154

**TO:** Theodora Berger  
Attorney General's Office  
300 South Spring Street, Room 500  
Los Angeles, California 90013

**FROM:** Nancy J. Long *NJL*  
Office of Legal Counsel  
Department of Toxic Substances Control  
P. O. Box 806  
Sacramento, California 95812-0806

**SUBJECT:** Whittaker Bermite

**DATE:** November 29, 1995

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This is to request that the Office of the Attorney General represent the Department of Toxic Substances Control (DTSC) in the above entitled enforcement case. As requested by your office, I have below listed all potential violations and the basis for the violations, including a discussion of the applicable statute of limitations and case history.

On March 30, 1993, Supervising Staff Attorney, Steve Koyasako sent a memorandum to the Attorney General's Office seeking assignment of a Deputy Attorney General to assist DTSC in selecting the appropriate civil remedy and to represent DTSC in any litigation which may arise in the course of a civil enforcement action. At that time, DTSC was pursuing a parallel criminal investigation with the Los Angeles District Attorney's Office and the U.S. Attorney's Office. The basis of the criminal investigation was that Whittaker knowingly provided false and misleading information to the United States Environmental Protection Agency and DTSC.

Brian Hembacher has some familiarity with the file in that he reviewed documents seized through a search warrant executed in June, 1992. As you know, as a result of the search, DTSC seized approximately 40,000 documents. DTSC presently retains 10,332 documents it deems relevant to its investigation of Whittaker. I have provided a partial list of seized documents that support the alleged violations; it is by no means comprehensive. However, to properly organize the evidence, it may become necessary to index and set up a retrieval system for the documents. Please have the assigned Deputy A.G. call me at his or her earliest convenience to arrange delivery of the documents.





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The contacts for this case are:

Staff Attorney: Nancy J. Long (916) 324-3154.

Please send a copy of all correspondence and pleadings to the attorney contact.

       A Proposition 65 disclosure has been made regarding this case.

  X   A Proposition 65 disclosure has not been made regarding these cases because there was not an illegal discharge likely to cause substantial injury to the public health or safety.

Case History:

On March 7, 1991, Alan Sorsher, P.E., Associate Waste Management Engineer, Department of Toxic Substances Control, Region 3, received anonymously a document or "mystery document" which allegedly was authored by Christopher Thompson, a former employee with Wenck Associates, Inc. ("Wenck"), an environmental consulting firm that was performing services for Whittaker, Corporation, Bermite Division. The document consists of handwritten notes, drafts, and copies of a typewritten "Memorandum Report," dated June 22, 1987 and titled "Investigations of Landfills on Bermite Facility Through June 19, 1987." One of the drafts is addressed to an individual named "Gordon." Gordon Louttit is an attorney and former Vice President of Whittaker. Apparently, Mr. Louttit is no longer employed by Whittaker.

The so-called "mystery document" describes investigations, remedial activities and identifies the cleanup of hazardous waste sites which had never before been disclosed to nor was oversight provided by the regulatory agencies. On or about March 8, 1991, Sorsher forwarded a copy of the document to Steve Koyasako, Supervising Staff Counsel. The document was subsequently forwarded to the DTSC Criminal Investigations Branch with a request that an investigation be initiated.

On June 9, 1992, DTSC, with the assistance of agents from the Los Angeles County District Attorney's Office, executed search warrants at the corporate offices of Whittaker Corporation, Los Angeles, California; Acton, Mickelson, Van Dam, Inc. (AMV), El Dorado Hills, California; Wenck Associates, Maples Plain, Minnesota; and the residence of Christopher F. Thompson, former employee of Wenck Associates, Minneapolis, Minnesota. During the searches, DTSC seized numerous documents relating to

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the closure of the Bermite facility. The documents also disclosed additional violations for illegal disposal, transportation, storage and treatment, which are the subject of this referral.

On June 16, 1993, DTSC conducted a focused investigation and sampling effort of the so-called Lead Azide area and Burn Valley. According to facility representatives, the Lead Azide area was previously the location of a Red Phosphorous Stabilization unit. Sampling results later confirmed that red phosphorous was discovered in the Lead Azide area while copper and tetrachloroethylene were found in the Burn Valley.

Illegal Disposal or Treatment, and Illegal Storage

Whittaker violated Health and Safety Code section 25189.2, subd. (c), for illegal disposal of hazardous waste by conducting mining and training exercises in the desert. Arguably, such activity may alternatively constitute illegal treatment.

During 1986-1987, Whittaker Corporation engaged in illegal transportation, treatment and/or disposal of surplus ordnance in the desert, a project Whittaker referred to as its "mining and training operation" or "desert project". According to Whittaker, the "program assisted mining activities through rock blasting" and provided field training in the safe handling and detonation of ordnance. (See, February 9, 1993 letter from Ronald Hausman to Joseph P. Charney.) Whittaker further claims "inventoried" explosives were used as a product and, therefore, were not a "waste" subject to regulation in California. However, documents seized in the June, 1992 search indicate that Whittaker engaged in a concerted effort to dispose of surplus ordnance while internally ceasing operations at the facility. Additionally, some of the documents suggest that Whittaker may have been engaging in illegal treatment by burning flares in a tunnel onsite.

Finally, these facts may give rise to an additional violation for illegal storage. In the Report of Whittaker Corporation in Response to Criminal Investigation of Bermite Facility (8/6/93, p. 26), Whittaker admits that during its environmental audit it inventoried surplus and waste hazardous materials being "stored" at the Bermite facility. Such action would constitute illegal storage.



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The following documents support these allegations:

Doc. #5311-5314 first mining & training performed 5/6/86; #5375-5386 shipment took place; Doc. #9711 is letterhead copy; Doc. #5016-5017 referencing shipments; Doc. #8430-#8438 report to management on "Desert project"; Docs. #5466-68 references shipments; Docs. #8430-8431-indicate interest in saving time & money; Doc. #8435 calls desert activities as "disposal effort"; Doc. #8438 discusses DTSC inspection; Doc. #5045 progress report #20 discusses DTSC inspection; Doc. #8433-corporate overview by George A. Meehlies; Doc. #5052 references Brower facility, Doc. #4040-mining & training most advantageous; Doc. #9829-9833 progress report #37 discusses shipments of explosives; Doc. #8440 memo on "inventory Disposal Support Services"; Doc #8448-corporate overview; Doc. #1747 lists "Problem areas" & undisclosed hazardous waste, including "surplus ordnance"; Doc. #1960-1963 lists material to be disposed of, including numerous ordnances; Doc. #9750-9776-references mining & training, attaches "inventory", CHP slips; Doc. #5507-5518, 9647-9653 indicates 16,879 pounds used in this "activity"; Doc. #8385-8387 Salin & Parsons no longer comfortable performing "tasks"; Doc. #8483-8499 investigation of Jerry Brower; 3633-3635 problems w/ Salin & Parsons; Doc. #1749-1751 desert operation v. Brower/Broco Inc.; Doc. #9885-9897 "Mining & Training alternative most advantageous"; Doc. #5613-5618 inspection of Brower facility; Doc. #5362-5374, 5446-5467, 5468-5479, 5507-5518, 9647-9653 summarizes mining and training activities; Doc. 5423-5431 shipments to Hosford Mine; Doc. 5040-5044 explosive wastes shipped to Louisiana; Doc. 3573-3576 insurance for transportation; Doc. #9898-9899 will discuss finding of the Brower facility; Doc. #9814-9820 significant amounts of explosive require shipment to Louisiana; Doc. #4783 references "mining & training"; Doc. #5316-5374 discusses inventory & inspection & mining & training operations; Doc. #5408-5431 discusses proposed red phosphorus removal procedure & routes for explosives; Doc. #8532-8537 are possible photos of desert operation; Doc. #10102-10103 states mining & training activities have concluded; Doc. #8440 burning waste flare pellets in the tunnel.

#### Illegal Transportation

Whittaker violated Health and Safety Code section 25162, subd. (a) for illegal transportation of hazardous waste associated with the mining and training operations.

See documents listed above.

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### Illegal Treatment

Whittaker violated Health and Safety Code section 25201, subd. (a) for illegal treatment of hazardous waste in that it operated a chemical recovery facility and a wastewater neutralization process without authorization from DTSC.

The following documents support these allegations:

Doc. #5541 references operation of a chemical recovery facility; Doc. #9629 "treated 100 lbs. M-206 powder"; Doc. #9640 & #9633 chemical recovery facility put into operation on 7/10/86; Doc. #9645-9646 specification for reclamation of & neutralization of PTFE; Doc. #9774 references treatment or neutralization, 4,000 lbs. Baker Oil needs neutralization; Doc. #9726 bid for acetone recovery system & chemical neutralization; Doc. #9629-9630 chemical recovery facility continued, treatment of reject cartridges, Baker oil, contaminated rags and paper & floc material; Doc. #1747 lists "Problem areas" & undisclosed hazardous waste, including "Baker Oil"; Doc. #3466 handdrawn elementary neutralization unit; Doc. #5395-5399-discusses powder recycling system; Doc. #1960-1963 lists material to be disposed of, including powders; Doc. 1815-1830 Jones, Day comments regarding revised closure plan & need to de-emphasize "treatment"; Doc. #4783 references treatment methods; Doc. #5305 discusses powder recycling system; Doc. #5396 discusses development of a red phosphorous removal procedure; Doc. #5397-5402 discusses a loose powder recycling technique; Doc. #5408-5431 discusses proposed red phosphorus removal procedure & routes for explosives

### Illegal Storage/Disposal

Whittaker violated Health & Safety Code sections 25189.2, subd. (c) and 25201, subd. (a) for illegal disposal and/or storage of red phosphorous and perchloroethylene, hazardous wastes, in the lead azide and burn valley areas.

The "Burn area" is a valley approximately 1200 feet long. In March, 1992, heavy rains and subsequent rain water run-off caused surface soils to erode and expose buried waste material. Whittaker's consultant, AMV submitted a report stating that the excavated soil-waste mixture from this area, was contaminated to the extent that the Soluble Threshold Limit Concentration (STLC), for copper and lead exceed the regulatory limits, thereby requiring Whittaker to dispose of approximately 374 cubic yards or 37 truckloads of contaminated soils as hazardous waste. The soils were transported to the Class I hazardous waste landfill at



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Kettleman Hills, California under Uniform Hazardous Waste Manifests.

On November 3, 1992, Alan Sorsher received from Anden, a developer who formed a partnership with Whittaker, a copy of a report prepared by its consultant, IT.<sup>1</sup> IT performed field work at the site in approximately February, 1990. According to the report, while using a backhoe, IT unearthed a fifty-five gallon drum which subsequently spilled. The drum was labeled "butarez", apparently a chemical substance used as a binder. Further, the report states that IT exhumed two crushed fifty-five gallon trichloroethane drums and four more crushed drums which were to be removed and disposed of offsite. According to IT, the drums appeared to have been emptied and crushed prior to burial.

Additionally, the IT report contains several results of soil boring and soil sampling conducted in February, 1990. A soil sample of the "burn area" indicates levels of lead and copper above the TTLC limits. Seven samples in the same area, tested for organics, detected perchloroethylene, also known as tetrachloroethylene (PCE). Additionally, four burn area samples detected trichlorethylene (TCE).

On January 20, 1993, Alan Sorsher received, also from Anden, a copy of an engineering report prepared in approximately May, 1990 by Pacific Soils. According to the report, Pacific Soils performed seventy-five drill borings and dug thirty-nine trenches in areas scattered across the property. Fifteen borings detected buried debris or odors. One boring, which extended 25-30 feet, recorded "slight solvent odors." Finally, a trench area which was eighty feet long and five feet deep revealed debris and "abundant scrap metal and pipe."

According to a document seized during execution of the search warrant in June, 1992, Pioneer Consultants reported to Wenck Associates in 1986, that vapors were detected in borings

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<sup>1</sup> The "IT Environmental Assessment Report" was previously referenced in a document titled "Hazardous Waste Summary," prepared by AMV for Anden. This Hazardous Waste summary document was given to Sorsher in early March, 1992 by AMV during a meeting between AMV and DTSC. The report notes an interview with Hugo Lizza, former president of Bermite Powder Company and the fact that numerous soil samples were taken in the burn area. The samples were analyzed for hazardous metal constituents, including but not limited to copper and lead, and were found to be hazardous.

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performed in the burn area. However, in a December, 1986 Wenck Associates Report, Whittaker failed to report the boring results.

In March 30, 1992, consultant AMV forwarded to Alan Sorsher the July 24, 1987 Site Assessment of Selected Areas of the Bermite Division Facility Prepared by Wenck and Associates. Alan Sorsher's notes from a telephone conversation held Friday, March 27, 1992 indicate that during that conversation he was advised the 1986 Environmental Audit report was "prepared as attorney-client". Additionally, the IT Report prepared under contract to Anden was "never finished" because Anden terminated the contract with IT and Ed Muller found it had errors.

The April 3, 1995<sup>2</sup> memorandum from Fred Macksoud, Deputy District Attorney to Robert Heflin, Head Deputy indicates that the D.A.'s Office rejected the illegal disposal case based on the running of the statute of limitations. According to Macksoud, DTSC reviewed the August 1988 report which would have alerted an inspector to the likelihood that the "east fork at the premises contained hazardous waste materials." This cursive analysis fails to address the specific timing of when DTSC received facts sufficient to believe an illegal disposal occurred in the areas described.

The earliest DTSC could have learned of an ongoing disposal in the burn area was in March 30, 1992 when AMV forwarded to Sorsher the July 24, 1987 Site Assessment of Selected Areas of the Bermite Division Facility Prepared by Wenck and Associates. Alan Sorsher's notes from a telephone conversation held Friday, March 27, 1992 indicate that during that conversation he was advised the 1986 Environmental Audit report was "prepared as attorney-client". Additionally, the IT Report prepared under contract to Anden was "never finished" because Anden terminated the contract with IT and Ed Muller found it had errors.<sup>3</sup> It wasn't until November 3, 1992 when Sorsher received from Anden a copy of the report prepared by IT.

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<sup>2</sup> It should be noted that DTSC, Criminal Investigations Branch, did not receive a copy of this memorandum until October, 1995.

<sup>3</sup> See Document 001680- Acton, Mickelson & van Dam record, dated March 27, 1992, memorializing conversation with Ed Muller indicating Ed Muller stated "No on 1986 Report 'Attorney Client Work Product'" but OK on 1987 Wenck Report, "No on IT Report."



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On May 19, 1993 DTSC investigator Rod Fong conducted an interview with Hassan Amini, PhD, R.G. Principal Geoscientist, McLaren Hart, regarding Amini's previous employment at IT. Amini was the project manager on the environmental assessment report for the Anden Group, an investment partner with Whittaker. Amini stated the project started in approximately December 1989, and lasted until shortly after a draft report was issued in May, 1990.

Amini stated that the project was terminated following the draft report prepared by Amini and IT. Amini stated the report was not well received by Whittaker, specifically Edward Muller, Vice-President and Chief Administrative Officer, Secretary General for Whittaker, whom Amini characterized as being angry and resentful of IT's findings and suggestions for remediation. Amini stated that Muller was angry because in Amini's opinion, the entire valley where the RCRA Burn Pits unit was located, was contaminated to the extent that the whole valley could be considered a solid waste management unit, and would under state and federal law, require disclosure and cleanup.

According to Amini, Whittaker employee Al Simmons subsequently contracted with Whittaker to perform the cleanup, which took approximately one week. Amini stated that Anden authorized IT to have an IT employee onsite during Simmons's cleanup for observation purposes only. According to Amini, Simmons "combed" the valley floor using heavy equipment having large metal teeth, instead of first determining the extent of chemical contamination in the soil, followed by removal of the contaminated soil. Amini stated the pointed out discolored and/or otherwise questionable waste materials that were unearthed by Simmons's crew, only to have the questionable waste materials pushed to one side and eventually co-mingled with other material.

According to other documents seized in the June, 1992 search, in approximately July, 1988, Braun, an Environmental Testing and Consulting Service hired by a potential buyer of the property, completed an overview assessment of files made available by Gordon J. Louttit. The Braun Report references an attachment, Appendix D, stating that Appendix D is an internal document prepared by Wenck giving an overview of approximately 18 individual sites with varying degrees of contamination. However, Appendix D is not included in the seized documents.

According to Braun, Appendix D has not been provided to the regulatory agencies and it is Braun's understanding that many of these sites are not known to exist by the regulators. The Braun report further states that Appendix D is "notable" in that it



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lists "disposal sites that were suspected to contain unexploded ordnance, a number of landfills, a swell on site containing ordnance, . . . The ordnance area(s) was rumored to have unexploded ordnance resulting from defect [-sic] or landslides which covered ordnance slated for detonation." The report concludes that "there is a good chance additional areas containing ordnance unknown to Whittaker may be found in the future or during and after site development."

The following documents support these allegations:

Doc. #752-753 regarding discussion w/ Steve Jones whether Pioneer Report submitted to any agencies; Doc. #9176 & 9195 portion of 1986 Environmental Assessment Report which includes suspected "Buried ordnance" in Burn Pit; Doc. #5665-5666 investigation in burn pit (ordnance) area was investigated by digging four investigation pits "no hazardous materials were found at any of these sites"; Doc. #5152 references work to begin in "burn pit debris area"; Doc. # 5145 references work in burn pit area; Doc. #9195 discusses area as "primary burning grounds for contaminated materials"; Doc. #5727-5740 & 5743 includes burn area sampling results.

The following documents support the fraud exception to the attorney/client privilege:

Doc. #1306 letter from Louttit suggesting all documents produced should be considered attorney/client privileged; Doc. #8388 sets forth the initial plan to retain Wenck Associates and that all reports and data are privileged communications prepared at Louttit's direction; Doc. #9160-9175 describes the need to perform an internal investigation without regulatory oversight

Statute of Limitations:

With the exception of the violations associated with the "Mining and Training Operation", the above-described violations were first discovered by DTSC after reviewing documents seized in the initial search conducted in June, 1992. Arguably, DTSC may have had some information in the "mystery memo", received on March 7, 1991 that additional investigation was necessary at the facility. However, DTSC had no knowledge regarding illegal transportation, treatment or storage until the documents revealed facts supporting these violations.

Los Angeles District Attorney, Joseph Charney, rejected the criminal case based upon a June 19, 1987 report of investigation detailing DTSC's previous inquiry and investigation into

Theodora Berger  
November 28, 1995  
Page 10

allegations that Whittaker's Bermite Division was illegally disposing of hazardous waste in the desert. DTSC learned of the allegations though an anonymous complaint received on August 25, 1986. After conducting some inquiry into the matter, the investigators recommended that the investigation be closed because they concluded that the anonymous allegations were "not true."<sup>4</sup>

A memorandum dated June 11, 1993 from Nancy J. Long to James R. Cutright concludes that for purposes of a civil referral, DTSC may be able to effectively avoid a statute of limitations defense by affirmatively pleading that Whittaker engaged in a fraudulent concealment of material facts. Whether the investigators exercised reasonable diligence and could not have discovered the fraud at an earlier date is a question of fact to be determined by a judge or jury.

cc: Alan Sorsher  
Region 3/Glendale  
Department of Toxic Substances Control  
1011 Grandview Avenue  
Glendale, California 91201

Mary Locke, Chief  
Criminal Investigations  
Department of Toxic Substances Control  
400 P Street  
P.O. Box 806  
Sacramento, California 95812-0806

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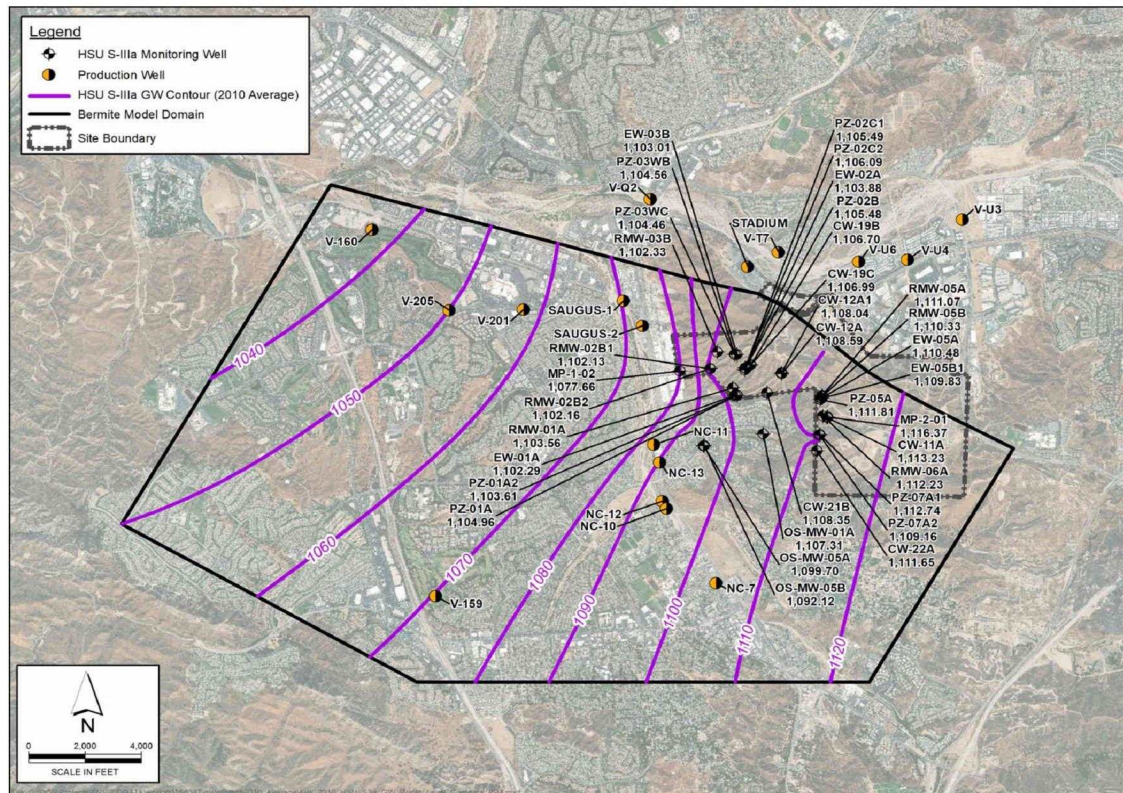
<sup>4</sup> It should be noted that several of the seized documents reference this investigation conducted by the DTSC investigators and provide evidence of deliberate concealment of material facts by Whittaker.

**EXHIBIT X**

# **GROUNDWATER FLOW MODEL UPDATE FORMER BERMITE FACILITY SANTA CLARITA, CALIFORNIA**

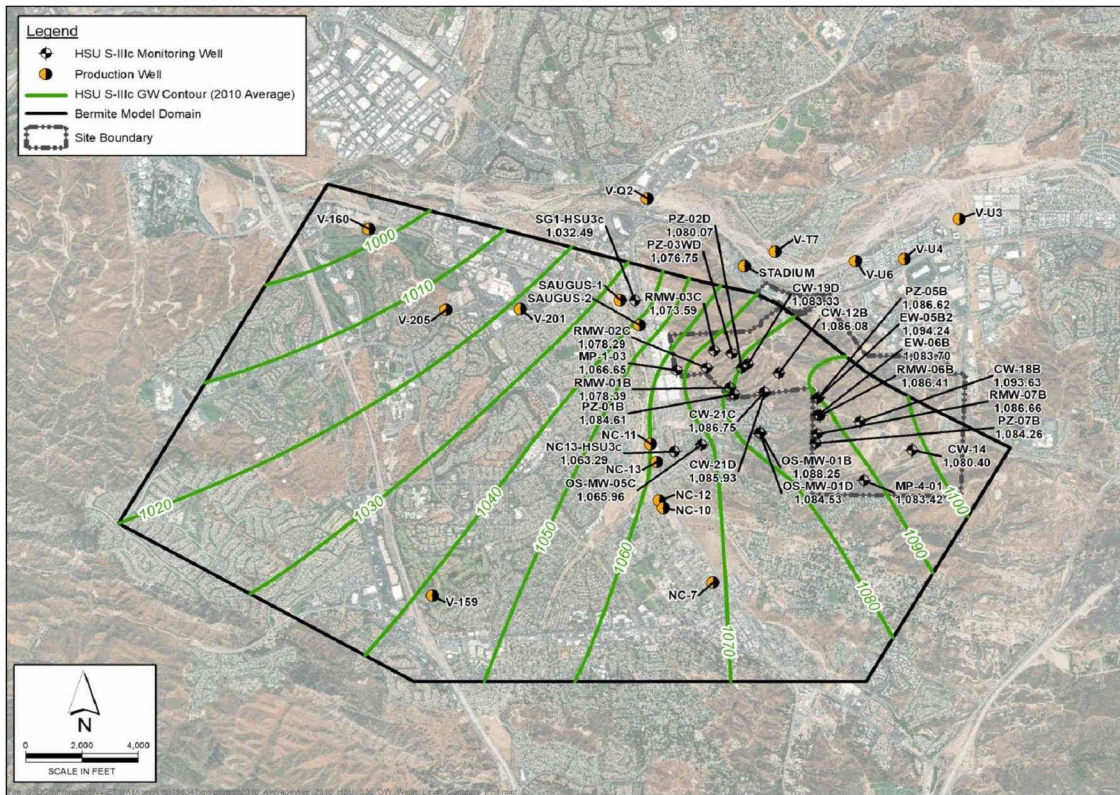
February 26, 2019





Interpolated values used in model along east and west boundaries, and further adjusted during calibration

Flow is generally to the west



Interpolated values were used in model along east and west boundaries, and further adjusted during calibration

Flow is generally to the west

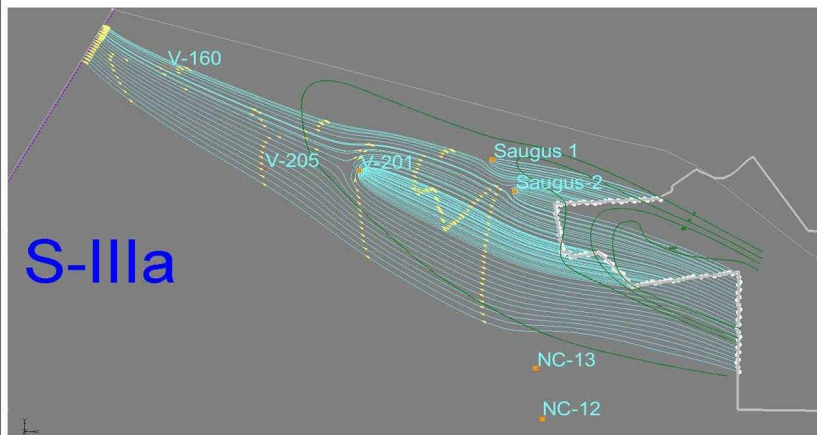


| Aquifer Unit | Well V-201<br>(GPM) | Well V-205<br>(GPM) | Saugus 1<br>(GPM) | Saugus 2<br>(GPM) | NC-12<br>(GPM) | NC-13<br>(GPM) |
|--------------|---------------------|---------------------|-------------------|-------------------|----------------|----------------|
| S-IIIa       | 654                 | na                  | 282               | 306               | 931            | 932            |
| S-IIIc       | 5                   | 68                  | -4                | 1                 | 66             | 55             |
| S-Va         | -35                 | 133                 | -46               | -42               | 39             | 19             |
| S-Vc         | -97                 | 364                 | -144              | -165              | 150            | 97             |
| S-VII        | -56                 | 201                 | -88               | -100              | 19             | 21             |
| Net Pumping  | 470                 | 767                 | 0                 | 0                 | 1,205          | 1,124          |

**Key Points:**

- V-201, and Saugus 2 are conduits for water from S-IIIa and S-IIIc to S-Va, S-Vc, and S-VII
- Saugus 1 is a conduit for water from S-IIIa to S-IIIc, S-Va, S-Vc, and S-VII

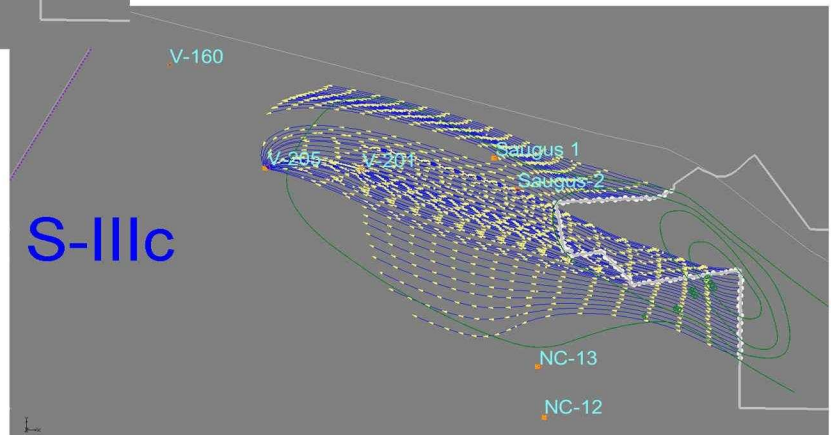




| particle pathline colors |        |  |
|--------------------------|--------|--|
| layer 1                  | S-IIIa |  |
| layer 3                  | S-IIIc |  |
| layer 5                  | S-Va   |  |
| layer 7                  | S-Vc   |  |
| layer 9                  | S-VII  |  |

**Key Points:**

- **S-IIIa:** V-201 captures some water originating from the site boundary, but some escapes toward V-160
- Saugus 1 and Saugus 2 act as conduits
- **S-IIIc:** Both V-201 and V-205 capture water originating from site boundary



**EXHIBIT Y**

**From:** HAmini <HAmini@gsi-net.com>  
**Sent:** Friday, February 22, 2019 1:40 PM  
**To:** Daniel Craig  
**Cc:** Jim Leserman; Sorab Panday; Li, David; Granger, Philip; tssimpson  
**Subject:** Model Presentation Outline

Hi Dan,

Hope you are doing well. Please see the following outline of the main topics of our **Groundwater Flow Model Update** presentation on Tuesday February 26<sup>th</sup> at 9:30 a.m.

- **Model Update**
  - Boundary conditions
  - Model layers
  - Hydraulic conductivities
  - Analysis of V-201 pumping & monitoring data
  - Off-site aquifer tests results
  - Slade (2002) pump test results
  - Stress period 2010 (average year)
  - Stress period 2018 (dry year)
- **Model Calibration & Results**
  - Homogeneous Model
  - Heterogeneous Model
- **Evaluation of Historic Conditions (1998 to 2010)**
  - Forward particle tracking
  - Reverse particle tracking
- **Evaluation of Hydraulic Containment**
  - Forward & reverse particle tracking
  - On-site containment
  - Off-site containment
- **Effects of V-160 and V-159 Pumping**
- **Impact of V-205 Pumping**

As always, we will welcome your comments and input.

Regards,

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Principal Hydrogeologist  
**GSI Environmental Inc.**  
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Irvine, California 92612

Direct: 949.242.8283  
Office: 949.679.1070  
Mobile: 949.233-4717

**EXHIBIT Z**

**Quarterly Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 124**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Third Quarter 2019  
(July 1 – September 30)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM  
999 Town and Country Road  
Orange, California 92868

January 2020

**AECOM**

AECOM Project No. 60266313

APPROVAL PAGE

**Quarterly Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 124**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Third Quarter 2019**

*Prepared by:*

**AECOM**

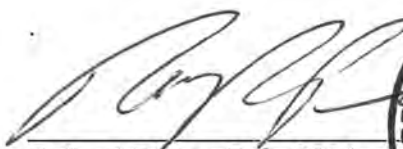
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Reviews and Approvals:



**Phil Granger**  
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Date: 01/20/2020



**Robert Perez, P.G. 8684**  
Senior Geologist  
AECOM



Date: 01/20/2020



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January 2020

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Former Bermite Facility

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## ABBREVIATIONS AND ACRONYMS

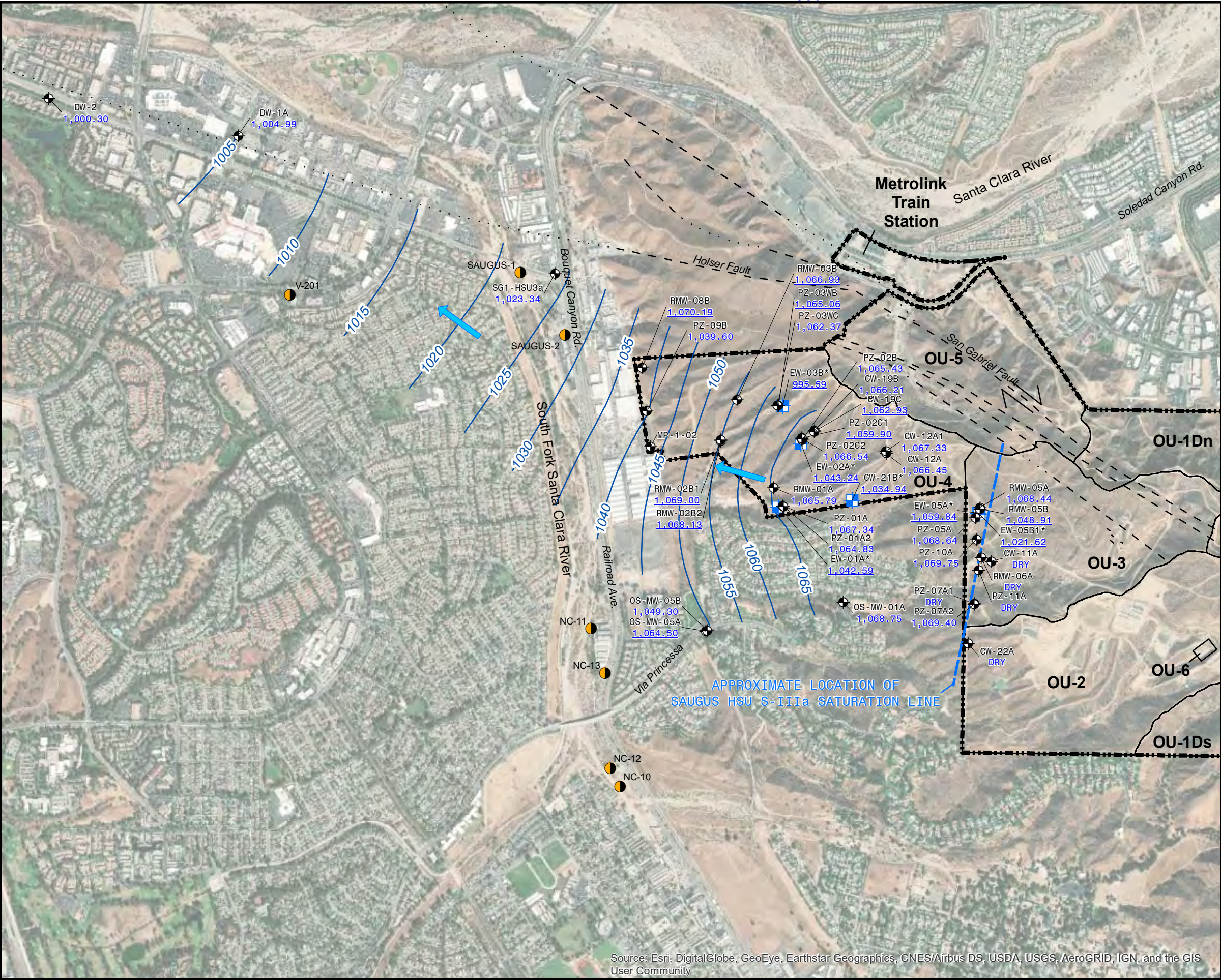
|             |   |
|-------------|---|
| AECOM       | AECOM Technical Services, Inc.                          |
| AMD         | Acton Mickelson van Dam, Inc.                           |
| AME         | Acton Mickelson Environmental Inc.                      |
| amsl        | above mean sea level                                    |
| Blaine Tech | Blaine Tech Services, Inc.                              |
| BTOC        | below top of casing                                     |
| BGS         | below ground surface                                    |
| °C          | degrees Celsius   |
| Calscience  | Eurofins Calscience, LLC                                |
| CDPH        | California Department of Public Health                  |
| Client      | Whittaker Corporation                                   |
| CLWA        | Castaic Lake Water Agency                               |
| COCs        | chemicals of concern or chain of custody                |
| DCE         | dichloroethene  |
| DHS         | State of California, Department of Health Services      |
| DI          | distilled   |
| DTSC        | Department of Toxic Substances Control                  |
| DTW         | depth to water  |
| EC          | Electric Conductivity                                   |
| EPA         | Environmental Protection Agency                         |
| EVO         | emulsified vegetable oil                                |
| Ft          | feet  |
| Gals.       | Gallons   |
| gpm         | gallons per minute                                      |
| GSI         | GSI Environmental Inc                                   |
| GW          | groundwater   |
| HSU         | Hydrostratigraphic Unit                                 |
| HWMU        | Hazardous Waste Management Unit                         |
| ID          | identification  |
| In          | inch  |
| ISB         | in-situ bioremediation                                  |
| ISCO        | in-situ chemical oxidation                              |
| JATO        | Jet Assisted Take-off                                   |
| LARWQCB     | Los Angeles Regional Water Quality Control Board        |
| LCS         | Laboratory Control Sample                               |
| LCSD        | Laboratory Control Sample Duplicate                     |
| LTL         | lower tolerance limit                                   |
| MCL         | maximum contaminant level                               |
| MD          | munitions debris  |
| MEC/UXO     | Munitions and Explosives of Concern/Unexploded Ordnance |
| mg/L        | milligrams per liter                                    |
| µg/L        | micrograms per liter                                    |
| µS/cm       | microsiemens per centimeter                             |



## ABBREVIATIONS AND ACRONYMS (continued)

|                  |  |
|------------------|--|
| MDL              | method detection limit   |
| mL               | milliliter   |
| MS/MSD           | Matrix Spike/Matrix Spike Duplicate  |
| NDMA             | n-nitrosodimethylamine   |
| NELAP            | National Environmental Laboratory Accreditation Program  |
| No.              | number   |
| NPDES            | National Pollutant Discharge Elimination System  |
| NTU              | nephelometric turbidity unit   |
| OU               | operable unit  |
| PCE              | tetrachloroethene  |
| pH               | negative log of the hydrogen ion concentration   |
| PDS              | post digestion spike   |
| PRZ              | permeable reactive zone  |
| QA/QC            | quality assurance/quality control  |
| QAPP             | Quality Assurance Project Plan   |
| QC               | quality control  |
| RBTC             | risk-based threshold concentrations  |
| RCRA             | Resource Conservation and Recovery Act   |
| RL               | reporting limit  |
| RPD              | relative percent difference  |
| SATP             | Saugus Aquifer Treatment Plant   |
| SCVWA            | Santa Clarita Valley Water Agency  |
| SEC              | specific electric conductance  |
| SM               | standard method  |
| SVE              | soil vapor extraction  |
| SWRCB            | State Water Resources Control Board  |
| TCA              | trichloroethane  |
| TCE              | trichloroethene  |
| TD               | total depth  |
| the Closure Plan | Whittaker Corporation, Bermite Division, Santa Clarita, California, CAD064573108, Facility Closure Plan Modifications        |
| the report       | Quarterly Groundwater Monitoring Report - Operable Unit 7 & Area 317 RCRA Monitoring Report No. 120, Former Bermite Facility |
| the Site         | Former Bermite facility  |
| TOC              | top of casing <i>and/or</i> total organic carbon   |
| TOX              | total organic halides  |
| USACE            | United States Army Corp of Engineers   |
| USEPA            | United States Environmental Protection Agency  |
| USGS             | United States Geological Survey  |
| UTL              | upper tolerance limit  |
| VOC              | volatile organic compound  |
| WDR              | Waste Discharge Requirements   |
| Whittaker        | Whittaker Corporation  |





**LEGEND:**

- RMW-05A  
1,071.70
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- CW-21B
- EXTRACTION WELL
- NC-13
- PRODUCTION WELL
- 1080
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- APPROXIMATE LOCATION OF SAUGUS HSU S-IIIa  
SATURATION LINE
- APPROXIMATE DIRECTION OF  
GROUNDWATER FLOW
- SITE BOUNDARY
- OU-5**
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

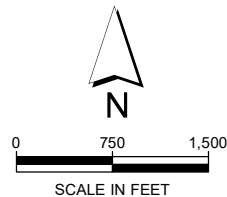
**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON SEPTEMBER 9 AND 10, 2019.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

\* EXTRACTION WELL PUMPING AT THE TIME OF GAUGING.

MSL MEAN SEA LEVEL

OU OPERABLE UNIT



**DRAFT**

QUARTERLY GROUNDWATER MONITORING REPORT - 3RD QUARTER, 2019

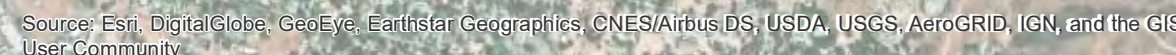
**POTENTIOMETRIC SURFACE MAP  
SAUGUS FORMATION HSU S-IIIa  
SOUTH OF THE SAN GABRIEL FAULT  
SEPTEMBER 2019**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                         |                       |           |
|-------------------------|-----------------------|-----------|
| Date 12-2019            | Whittaker Corporation | Figure    |
| Project No.<br>60266313 | <b>AECOM</b>          | <b>3e</b> |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community







**Quarterly Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 120**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Third Quarter 2018  
(July 1 – September 30)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

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January 2019

**AECOM**

AECOM Project No. 60266313

APPROVAL PAGE

**Quarterly Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 120**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Third Quarter 2018**

*Prepared by:*

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Date: 01/11/2019



**Jim Larwood, P.G. 6156, C.E.G. 1897**  
Senior Geologist  
AECOM

Date: 01/11/2019

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| Appendix G  | Laboratory Analytical Reports (included electronically)  |
| Appendix H  | Laboratory Data Validation Memorandum  |

AECOM  
January 2019

Quarterly GW Monitoring Report, Third Quarter 2018  
Former Bermite Facility

## ABBREVIATIONS AND ACRONYMS

|             |  |
|-------------|--|
| AECOM       | AECOM Technical Services, Inc.                   |
| AMD         | Acton Mickelson van Dam, Inc.                    |
| AME         | Acton Mickelson Environmental Inc.               |
| AMSL        | above mean sea level                             |
| Blaine Tech | Blaine Tech Services, Inc.                       |
| BTOC        | below top of casing                              |
| BGS         | below ground surface                             |
| °C          | degrees Celsius                                  |
| Calscience  | Eurofins Calscience, LLC                         |
| CD          | compact disc                                     |
| CDPH        | California Department of Public Health           |
| Client      | Whittaker Corporation                            |
| CLWA        | Castaic Lake Water Agency                        |
| COC         | chain of custody                                 |
| CR          | casing radius                                    |
| CV          | casing volume                                    |
| DCE         | dichloroethene                                   |
| DHS         | Department of Health Services                    |
| DI          | distilled  |
| DTSC        | Department of Toxic Substances Control           |
| DTW         | depth to water                                   |
| EC          | Electric Conductivity                            |
| EPA         | Environmental Protection Agency                  |
| EVO         | emulsified vegetable oil                         |
| Ft          | feet   |
| Gals.       | Gallons  |
| GW          | groundwater                                      |
| HSU         | Hydrostratigraphic Unit                          |
| HWMU        | Hazardous Waste Management Unit                  |
| ID          | identification                                   |
| In          | inch   |
| JATO        | Jet Assisted Take-off                            |
| LARWQCB     | Los Angeles Regional Water Quality Control Board |
| LCS         | Laboratory Control Sample                        |
| LCSD        | Laboratory Control Sample Duplicate              |
| LTL         | lower tolerance limit                            |
| MCL         | maximum contaminant level                        |
| mg/L        | milligrams per liter                             |
| µg/L        | micrograms per liter                             |
| µS/cm       | microsiemens per centimeter                      |
| MDL         | method detection limit                           |
| mL          | milliliter                                       |
| MS/MSD      | Matrix Spike/Matrix Spike Duplicate              |

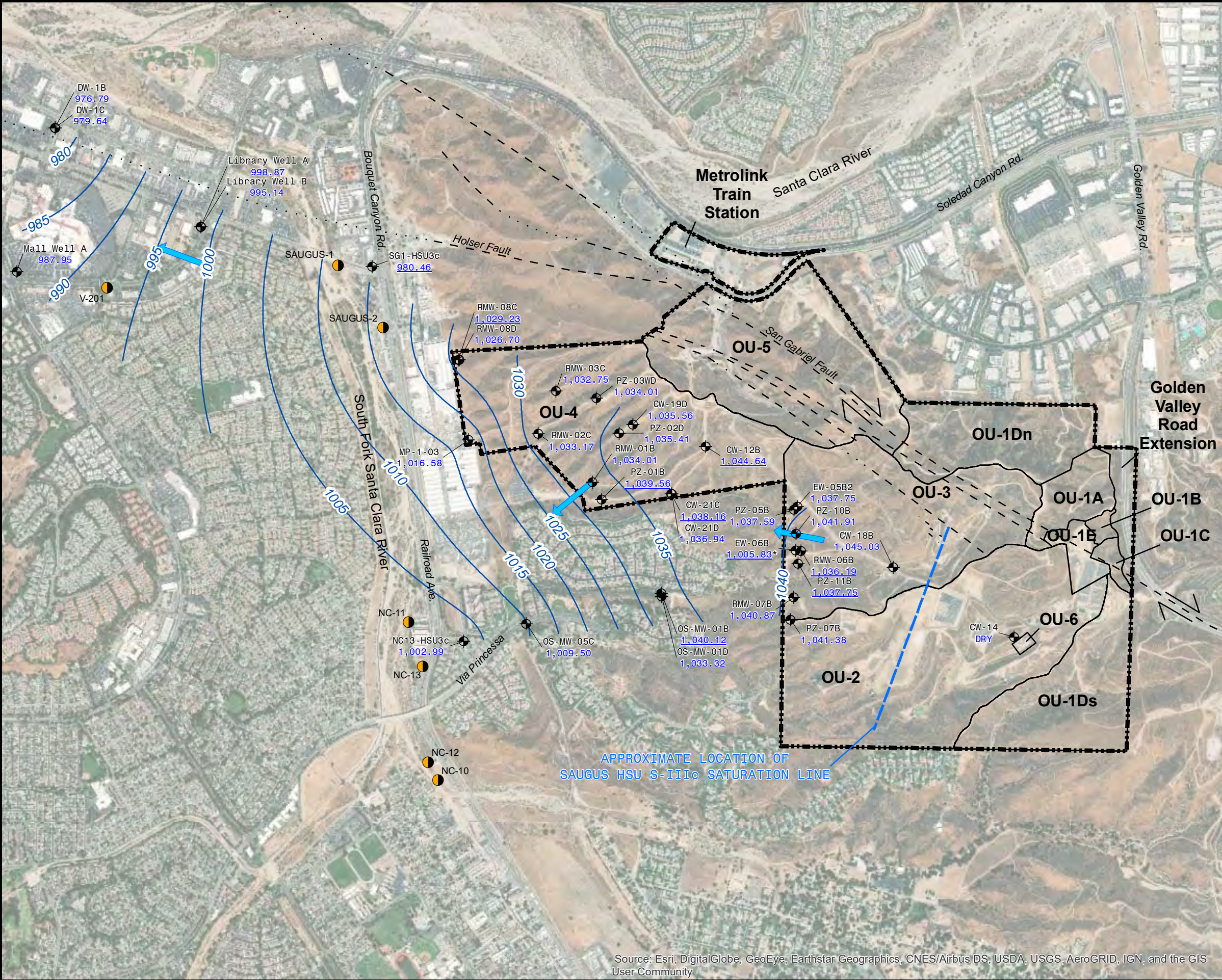
## ABBREVIATIONS AND ACRONYMS (continued)

|            |   |
|------------|---|
| NATP       | Northern Alluvium Treatment Plant   |
| NDMA       | n-nitrosodimethylamine  |
| NELAP      | National Environmental Laboratory Accreditation Program   |
| No.        | number  |
| NPDES      | National Pollutant Discharge Elimination System   |
| NTU        | nephelometric turbidity unit  |
| OU         | operable unit   |
| PCE        | tetrachloroethene   |
| pH         | negative log of the hydrogen ion concentration  |
| PDS        | post digestion spike  |
| QA/QC      | quality assurance/quality control   |
| QAPP       | Quality Assurance Project Plan  |
| QC         | quality control   |
| RCRA       | Resource Conservation and Recovery Act  |
| RL         | reporting limit   |
| RPD        | relative percent difference   |
| SATP       | Saugus Aquifer Treatment Plant  |
| SCVWA      | Santa Clarita Valley Water Agency   |
| SEC        | specific electric conductance   |
| SM         | standard method   |
| SVE        | soil vapor extraction   |
| SWRCB      | State Water Resources Control Board   |
| TCA        | trichloroethane   |
| TCE        | trichloroethene   |
| TD         | total depth   |
| the report | Quarterly Groundwater Monitoring Report - Operable Unit 7 & Area 317<br>RCRA Monitoring Report No. 120, Former Bermite Facility |
| the Site   | Former Bermite facility   |
| TOC        | top of casing <i>and/or</i> total organic carbon  |
| TOX        | total organic halides   |
| USACE      | United States Army Corp of Engineers  |
| USEPA      | United States Environmental Protection Agency   |
| USGS       | United States Geological Survey   |
| UTL        | upper tolerance limit   |
| VOC        | volatile organic compound   |
| Whittaker  | Whittaker Corporation   |









**LEGEND:**

RMW-07B  
1,040.87

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

NC-13

PRODUCTION WELL

1046

GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)

APPROXIMATE LOCATION OF SAUGUS HSU S-IIIc  
SATURATION LINE

APPROXIMATE DIRECTION OF  
GROUNDWATER FLOW

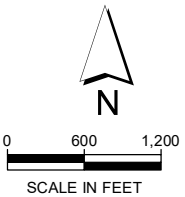
SITE BOUNDARY

**OU-5**

SITE OPERABLE UNIT

FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

- NOTES:**
- GROUNDWATER ELEVATIONS WERE RECORDED ON AUGUST 6, 7 AND SEPTEMBER 24-27, 2018.
  - UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.
- \* EXTRACTION WELL PUMPING AT THE TIME OF GAUGING.
- MSL MEAN SEA LEVEL
- OU OPERABLE UNIT



**FINAL**

|   |                       |                   |
|---|-----------------------|-------------------|
| QUARTERLY GROUNDWATER MONITORING REPORT - 3RD QUARTER, 2018   |                       |                   |
| <b>POTENTIOMETRIC SURFACE MAP</b><br>SAUGUS FORMATION HSU S-IIIc<br>SOUTH OF THE SAN GABRIEL FAULT<br>AUGUST 2018 |                       |                   |
| FORMER BERMITE FACILITY   |                       | SANTA CLARITA, CA |
| Date 01-2019  | Whittaker Corporation | Figure            |
| Project No.<br>60266313   | <b>AECOM</b>          | <b>3f</b>         |



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 117**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2017  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM  
999 Town and Country Road  
Orange, California 92868

March 2018



AECOM Project No. 60266313

APPROVAL PAGE

# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 117**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2017**

*Prepared by:*

**AECOM**

999 W. Town and Country Road  
Orange, CA 92868

Reviews and Approvals:

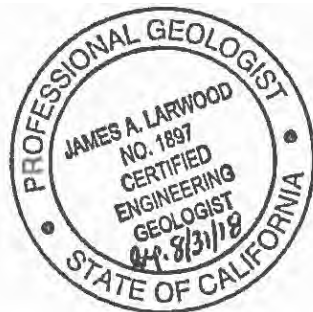


**Phil Granger**  
Project Manager  
AECOM

Date: 03/22/2018



**Jim Larwood, P.G. 6156, C.E.G. 1897**  
Senior Geologist  
AECOM



Date: 03/22/2018

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AECOM  
March 2018

Semi-Annual GW Monitoring Report, Fourth Quarter 2017  
Former Bermite Facility

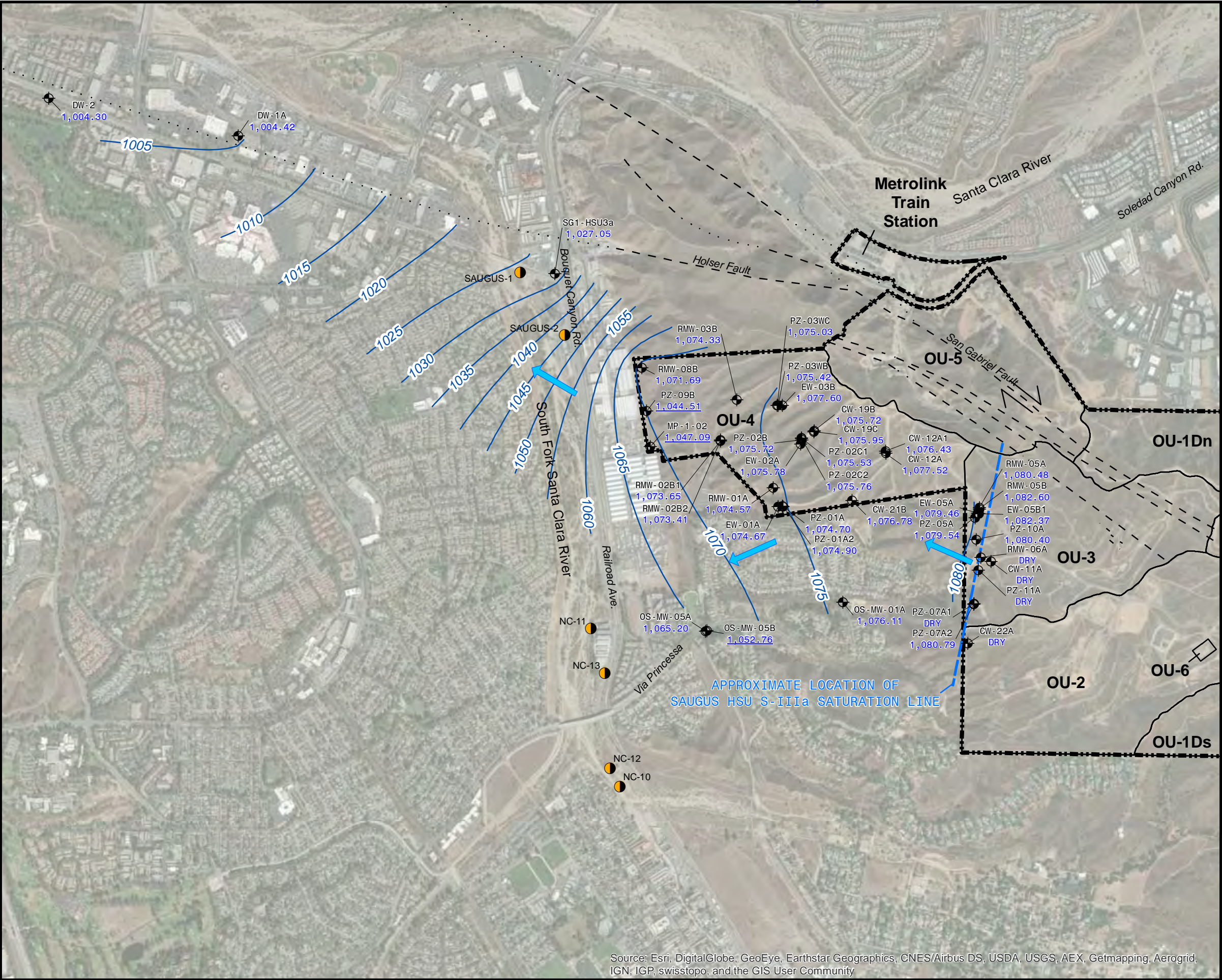
## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                          |
| AMD   | Acton Mickelson van Dam, Inc.                           |
| AME   | Acton Mickelson Environmental Inc.                      |
| AMSL  | above mean sea level                                    |
| BTOC  | below top of casing                                     |
| BGS   | below ground surface                                    |
| °C    | degrees Celsius   |
| CD    | compact disc  |
| CDPH  | California Department of Public Health                  |
| CLWA  | Castaic Lake Water Agency                               |
| CR    | casing radius   |
| CV    | casing volume   |
| DCE   | dichloroethene  |
| DHS   | Department of Health Services                           |
| DI    | distilled   |
| DTSC  | Department of Toxic Substances Control                  |
| DTW   | depth to water  |
| EPA   | Environmental Protection Agency                         |
| Ft    | feet  |
| Gals. | Gallons   |
| GW    | groundwater   |
| HSU   | Hydrostratigraphic Unit                                 |
| HWMU  | Hazardous Waste Management Unit                         |
| ID    | identification  |
| In    | inch  |
| JATO  | Jet Assisted Take-off                                   |
| LCS   | Laboratory Control Sample                               |
| LTL   | lower tolerance limit                                   |
| MCL   | maximum contaminant level                               |
| mg/L  | milligrams per liter                                    |
| µg/L  | micrograms per liter                                    |
| µS/cm | microsiemens per centimeter                             |
| mL    | milliliter  |
| NATP  | Northern Alluvium Treatment Plant                       |
| NCWD  | Newhall County Water District                           |
| NDMA  | n-nitrosodimethylamine                                  |
| NELAP | National Environmental Laboratory Accreditation Program |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System         |
| NTU   | nephelometric turbidity unit                            |
| OU    | operable unit   |
| PCE   | tetrachloroethene                                       |
| pH    | negative log of the hydrogen ion concentration          |

## **ABBREVIATIONS AND ACRONYMNS (continued)**

|       |  |
|-------|--|
| QA    | quality assurance                                |
| QAPP  | Quality Assurance Project Plan                   |
| QC    | quality control                                  |
| RCRA  | Resource Conservation and Recovery Act           |
| SATP  | Saugus Aquifer Treatment Plant                   |
| SEC   | specific electric conductance                    |
| SM    | standard method                                  |
| SWRCB | State Water Resources Control Board              |
| TCA   | trichloroethane                                  |
| TCE   | trichloroethene                                  |
| TD    | total depth                                      |
| TOC   | top of casing <i>and/or</i> total organic carbon |
| TOX   | total organic halides                            |
| USACE | United States Army Corp of Engineers             |
| USEPA | United States Environmental Protection Agency    |
| UTL   | upper tolerance limit                            |
| VOC   | volatile organic compound                        |





**LEGEND:**

RMW-05A  
1,080.48

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

NC-13

PRODUCTION WELL

1080

GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)

APPROXIMATE LOCATION OF SAUGUS HSU S-IIIa SATURATION LINE

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

SITE BOUNDARY

**OU-5**

SITE OPERABLE UNIT

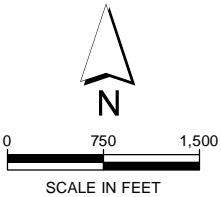
FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 13-14 AND DECEMBER 4-5, 2017.

2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

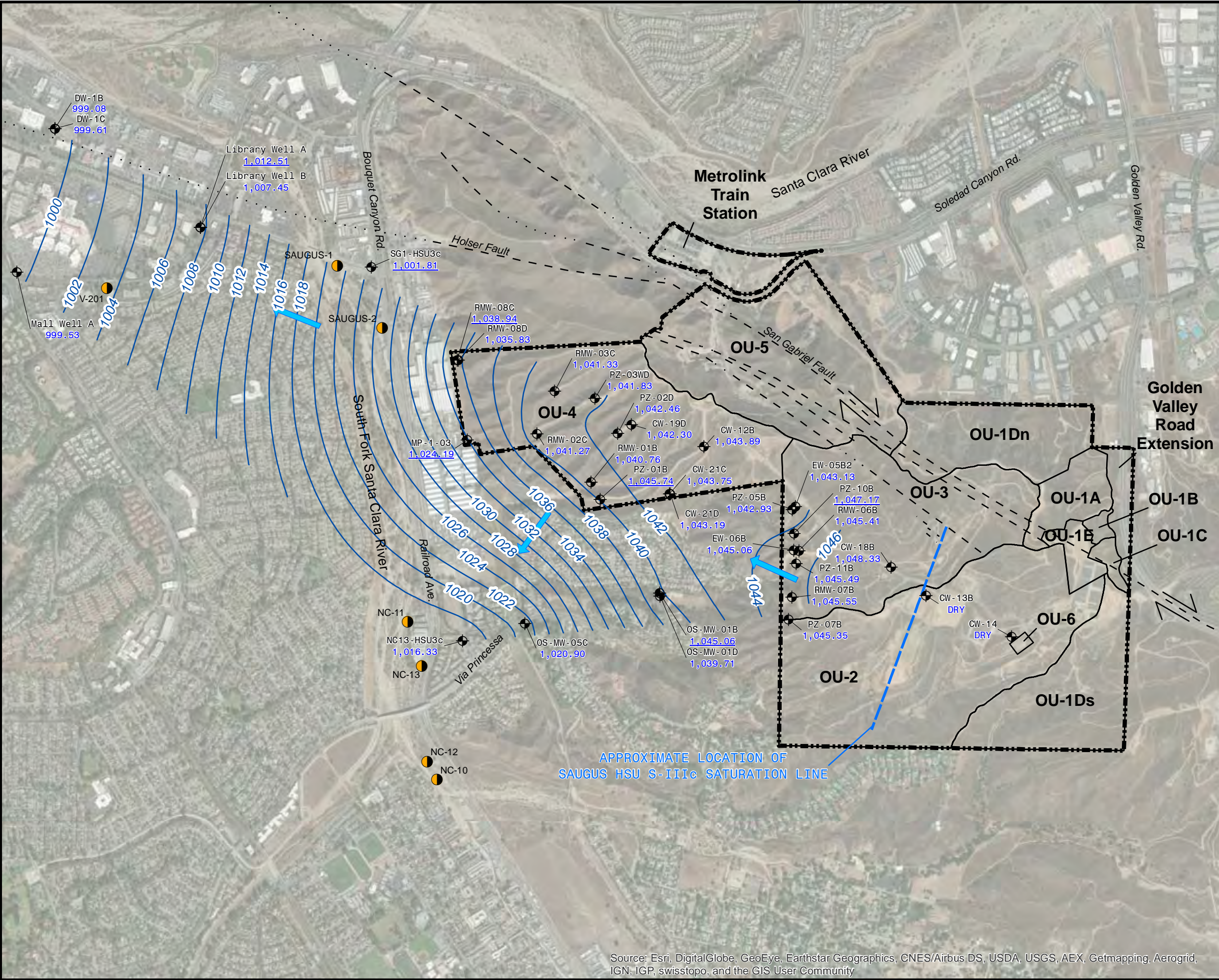
MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

|  |                       |                   |
|--|-----------------------|-------------------|
| SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2017  |                       |                   |
| <b>POTENTIOMETRIC SURFACE MAP</b><br><b>SAUGUS FORMATION HSU S-IIIa</b><br><b>SOUTH OF THE SAN GABRIEL FAULT</b><br><b>NOVEMBER 2017</b> |                       |                   |
| FORMER BERMITE FACILITY  |                       | SANTA CLARITA, CA |
| Date 03-2018   | Whittaker Corporation | Figure            |
| Project No. 60266313   | <b>AECOM</b>          | <b>3e</b>         |





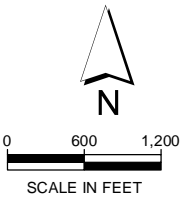
**LEGEND:**

- RMW-07B  
1,045.35 MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13 PRODUCTION WELL
- 1046 GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- APPROXIMATE LOCATION OF SAUGUS HSU S-IIIc  
SATURATION LINE
- APPROXIMATE DIRECTION OF  
GROUNDWATER FLOW
- SITE BOUNDARY
- OU-5** SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

- GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 13-15 AND DECEMBER 4, 5 AND 12, 2017.
- UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

|  |                       |                   |
|--|-----------------------|-------------------|
| SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2017  |                       |                   |
| <b>POTENTIOMETRIC SURFACE MAP</b><br><b>SAUGUS FORMATION HSU S-IIIc</b><br><b>SOUTH OF THE SAN GABRIEL FAULT</b><br><b>NOVEMBER 2017</b> |                       |                   |
| FORMER BERMITE FACILITY  |                       | SANTA CLARITA, CA |
| Date 03-2018   | Whittaker Corporation | Figure            |
| Project No.<br>60266313  | <b>AECOM</b>          | <b>3f</b>         |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 113**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2016  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM  
999 Town and Country Road  
Orange, California 92868

March 2017



AECOM Project No. 60266313

APPROVAL PAGE

# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 109**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2016**

*Prepared by:*

**AECOM**

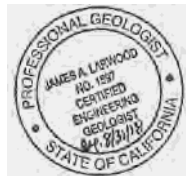
999 W. Town and Country Road  
Orange, CA 92868

Reviews and Approvals:



**Phil Granger**  
Project Manager  
AECOM

Date: 03/09/2017



**Jim Larwood, P.G. 6156, C.E.G. 1897**  
Senior Geologist  
AECOM

Date: 03/09/2017

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AECOM  
March 2017

Final Semi-Annual Monitoring Report, Fourth Quarter 2016  
Former Bermite Facility

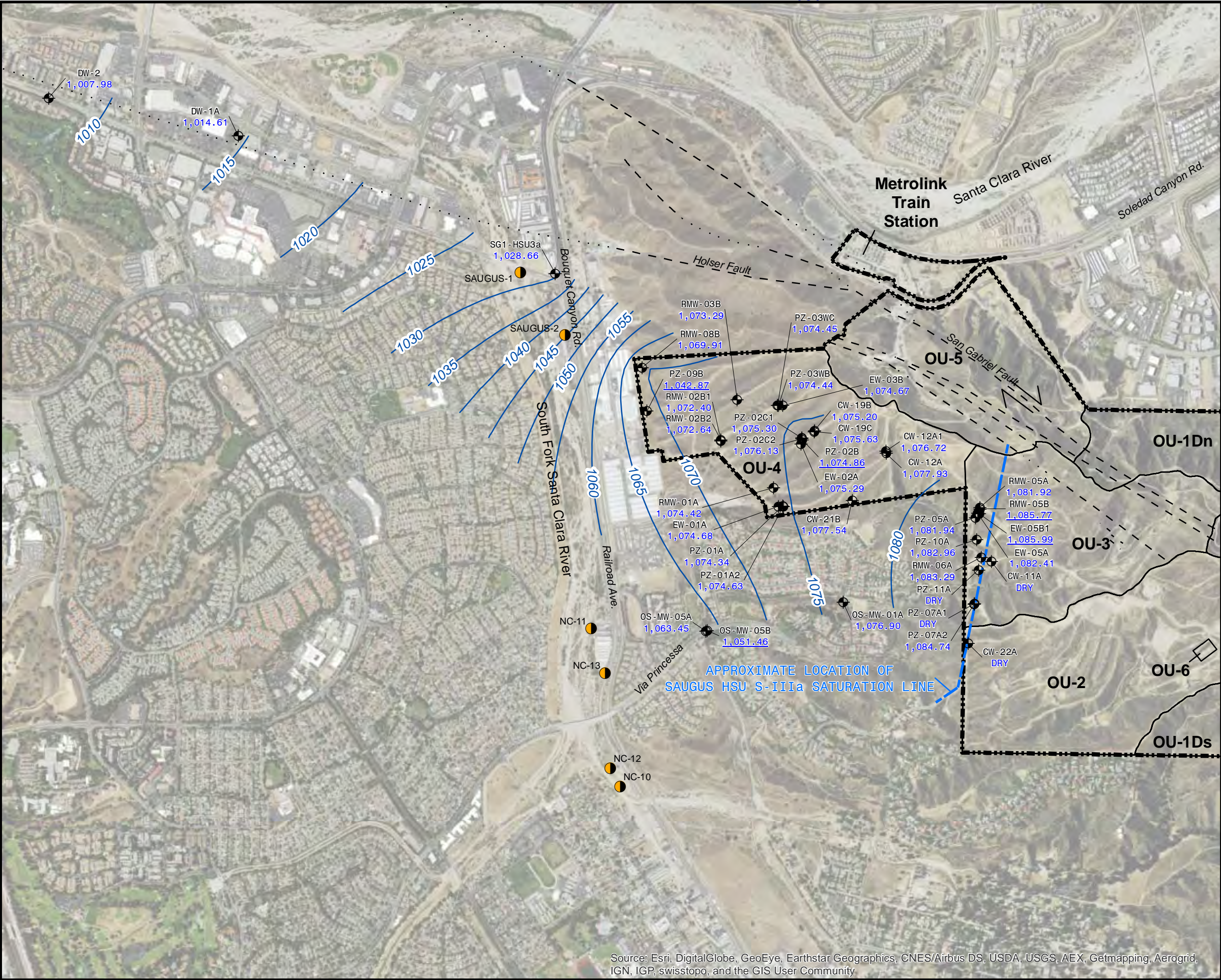
## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                          |
| AMSL  | above mean sea level                                    |
| BTOC  | below top of casing                                     |
| BGS   | below ground surface                                    |
| °C    | degrees Celsius   |
| CD    | compact disc  |
| CDPH  | California Department of Public Health                  |
| CR    | casing radius   |
| CV    | casing volume   |
| DCE   | dichloroethene  |
| DI    | distilled   |
| DTSC  | Department of Toxic Substances Control                  |
| DTW   | depth to water  |
| EPA   | Environmental Protection Agency                         |
| Ft    | feet  |
| Gals. | gallons   |
| HSU   | Hydrostratigraphic Unit                                 |
| HWMU  | Hazardous Waste Management Unit                         |
| ID    | identification  |
| In    | inch  |
| LTL   | lower tolerance limit                                   |
| MCL   | maximum contaminant level                               |
| mg/L  | milligrams per liter                                    |
| µg/L  | micrograms per liter                                    |
| µS/cm | microsiemens per centimeter                             |
| mL    | milliliter  |
| NATP  | Northern Alluvium Treatment Plant                       |
| NCWD  | Newhall County Water District                           |
| NDMA  | n-nitrosodimethylamine                                  |
| NELAP | National Environmental Laboratory Accreditation Program |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System         |
| NTU   | nephelometric turbidity unit                            |
| OU    | operable unit   |
| PCE   | tetrachloroethene                                       |
| pH    | negative log of the hydrogen ion concentration          |
| QA    | quality assurance                                       |
| QAPP  | Quality Assurance Project Plan                          |
| QC    | quality control   |
| RCRA  | Resource Conservation and Recovery Act                  |
| SEC   | specific electric conductance                           |
| SM    | standard method   |
| SWRCB | State Water Resources Control Board                     |

### **ABBREVIATIONS AND ACRONYMNS (continued)**

|       |  |
|-------|--|
| TCA   | trichloroethane                                  |
| TCE   | trichloroethene                                  |
| TD    | total depth                                      |
| TOC   | top of casing <i>and/or</i> total organic carbon |
| TOX   | total organic halides                            |
| USACE | United States Army Corp of Engineers             |
| USEPA | United States Environmental Protection Agency    |
| UTL   | upper tolerance limit                            |
| VOC   | volatile organic compound                        |





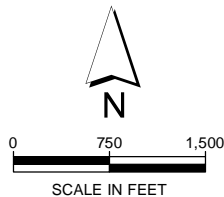
LEGEND:

- RMW-05A  
1,081.92
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1060
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- APPROXIMATE LOCATION OF SAUGUS HSU S-IIIa  
SATURATION LINE
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

NOTES:

1. GROUNDWATER ELEVATIONS WERE RECORDED ON  
NOVEMBER 14-16, 18, DECEMBER 5 AND 7, 2016.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT  
USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



FINAL

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2016

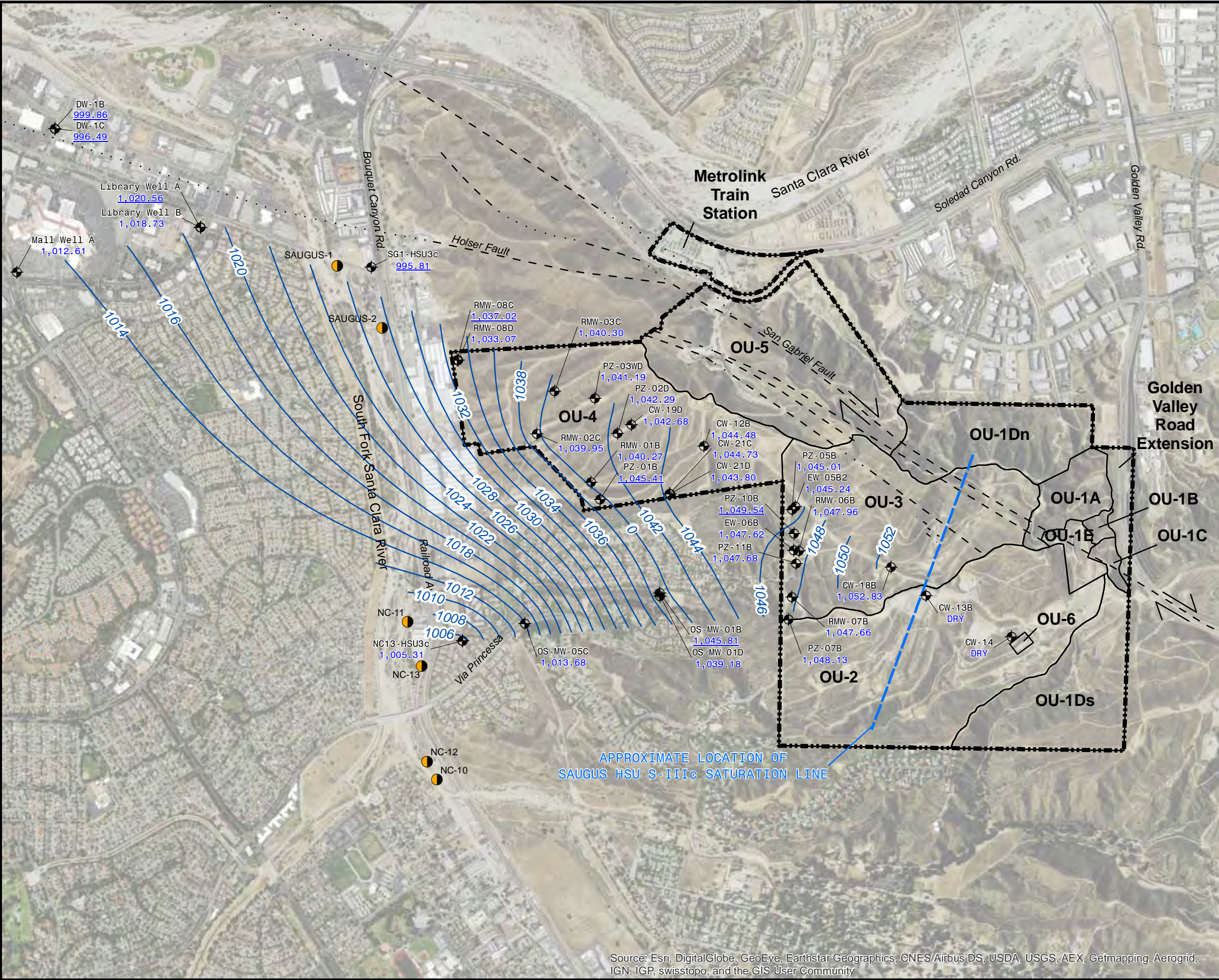
POTENTIOMETRIC SURFACE MAP  
SAUGUS FORMATION HSU S-IIIa  
SOUTH OF THE SAN GABRIEL FAULT  
NOVEMBER 2016

FORMER BERMITE FACILITY SANTA CLARITA, CA

|             |          |                       |        |
|-------------|----------|-----------------------|--------|
| Date        | 03-2017  | Whittaker Corporation | Figure |
| Project No. | 60266313 | AECOM                 | 3e     |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





**LEGEND:**

RMW-07B  
1,047.66

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

NC-13

PRODUCTION WELL

1032

GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)

APPROXIMATE LOCATION OF SAUGUS HSU S-IIIc  
SATURATION LINE

SITE BOUNDARY

**OU-5**

SITE OPERABLE UNIT

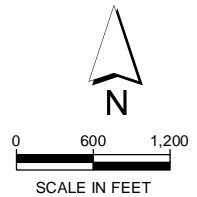
FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 14-15, 22, DECEMBER 5 AND 7, 2016.

2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

|  |                       |                   |
|--|-----------------------|-------------------|
| SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2016  |                       |                   |
| <b>POTENTIOMETRIC SURFACE MAP</b><br><b>SAUGUS FORMATION HSU S-IIIc</b><br><b>SOUTH OF THE SAN GABRIEL FAULT</b><br><b>NOVEMBER 2016</b> |                       |                   |
| FORMER BERMITE FACILITY  |                       | SANTA CLARITA, CA |
| Date 03-2017   | Whittaker Corporation | Figure            |
| Project No. 60266313   | <b>AECOM</b>          | <b>3f</b>         |



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**Former Bermite Facility  
22116 Soledad Canyon Road  
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**Prepared for:**

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999 Town and Country Road  
Orange, California 92868

March 2016



AECOM Project No. 60266313

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Fourth Quarter 2015**

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Reviews and Approvals:

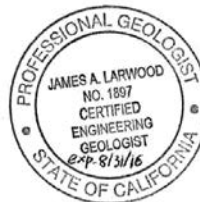


**Phil Granger**  
Project Manager  
AECOM

Date: 03/02/2016



**Jim Larwood, P.G. 6156, C.E.G. 1897**  
Senior Geologist  
AECOM



Date: 03/02/2016

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| Appendix I  | Tolerance Factors for Normal Tolerance Limits for 95% Population at 95% Confidence (k values)                  |

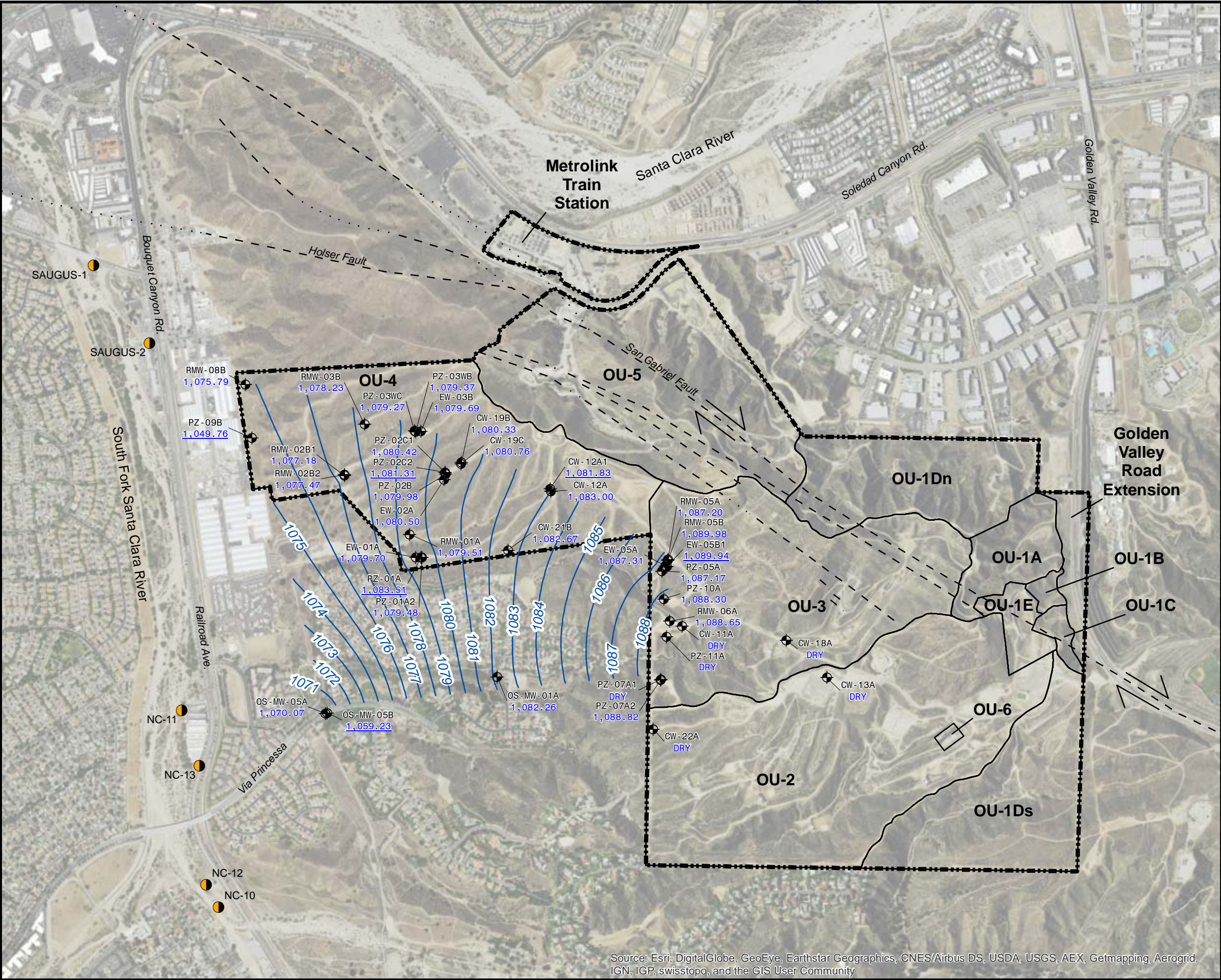
## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                          |
| AMSL  | above mean sea level                                    |
| BTOC  | below top of casing                                     |
| BGS   | below ground surface                                    |
| °C    | degrees Celsius   |
| CD    | compact disc  |
| CDPH  | California Department of Public Health                  |
| CR    | casing radius   |
| CV    | casing volume   |
| DCE   | dichloroethene  |
| DI    | distilled   |
| DTSC  | Department of Toxic Substances Control                  |
| DTW   | depth to water  |
| EPA   | Environmental Protection Agency                         |
| Ft    | feet  |
| Gals. | gallons   |
| HSU   | Hydrostratigraphic Unit                                 |
| HWMU  | Hazardous Waste Management Unit                         |
| ID    | identification  |
| In    | inch  |
| LTL   | lower tolerance limit                                   |
| MCL   | maximum contaminant level                               |
| mg/L  | milligrams per liter                                    |
| µg/L  | micrograms per liter                                    |
| µS/cm | microsiemens per centimeter                             |
| mL    | milliliter  |
| NATP  | Northern Alluvium Treatment Plant                       |
| NCWD  | Newhall County Water District                           |
| NDMA  | n-nitrosodimethylamine                                  |
| NELAP | National Environmental Laboratory Accreditation Program |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System         |
| NTU   | nephelometric turbidity unit                            |
| OU    | operable unit   |
| PCE   | tetrachloroethene                                       |
| pH    | negative log of the hydrogen ion concentration          |
| QA    | quality assurance                                       |
| QAPP  | Quality Assurance Project Plan                          |
| QC    | quality control   |
| RCRA  | Resource Conservation and Recovery Act                  |
| SEC   | specific electric conductance                           |
| SM    | standard method   |
| SWRCB | State Water Resources Control Board                     |

### **ABBREVIATIONS AND ACRONYMNS (continued)**

|       |  |
|-------|--|
| TCA   | trichloroethane                                  |
| TCE   | trichloroethene                                  |
| TD    | total depth                                      |
| TOC   | top of casing <i>and/or</i> total organic carbon |
| TOX   | total organic halides                            |
| USACE | United States Army Corp of Engineers             |
| USEPA | United States Environmental Protection Agency    |
| UTL   | upper tolerance limit                            |
| VOC   | volatile organic compound                        |





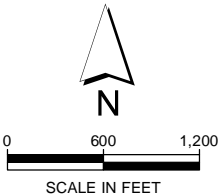
LEGEND:

- RMW-05A  
1,087.20
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1088
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

NOTES:

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 10-13, 2015.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



FINAL

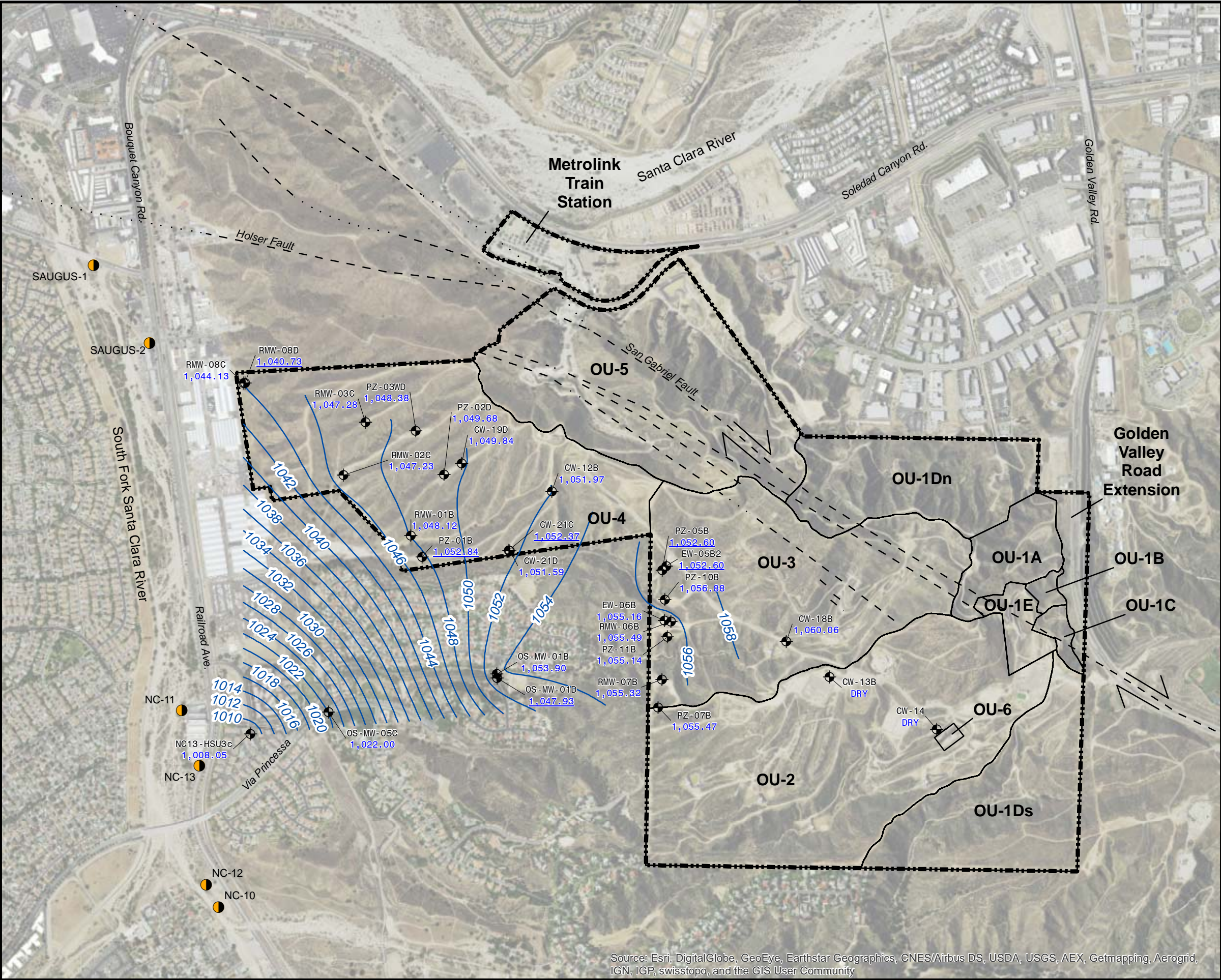
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2015

POTENTIOMETRIC SURFACE MAP  
SAUGUS FORMATION HSU S-IIIa  
SOUTH OF THE SAN GABRIEL FAULT  
NOVEMBER 2015

|                         |                       |                   |
|-------------------------|-----------------------|-------------------|
| FORMER BERMITE FACILITY |                       | SANTA CLARITA, CA |
| Date 03-2016            | Whittaker Corporation | Figure            |
| Project No. 60266313    | AECOM                 | 3e                |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





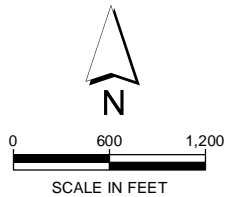
**LEGEND:**

- RMW-07B  
1,055.32
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1058
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 9-13 AND 16, 2015.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



FINAL

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2015

**POTENTIOMETRIC SURFACE MAP**  
**SAUGUS FORMATION HSU S-IIIc**  
**SOUTH OF THE SAN GABRIEL FAULT**  
**NOVEMBER 2015**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                      |                       |        |
|----------------------|-----------------------|--------|
| Date 03-2016         | Whittaker Corporation | Figure |
| Project No. 60266313 | AECOM                 | 3f     |



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 105**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2014  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM  
999 Town and Country Road  
Orange, California 92868

March 2015



AECOM Project No. 60266313

APPROVAL PAGE

# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 105**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2014**

*Prepared by:*

**AECOM**

999 W. Town and Country Road  
Orange, CA 92868

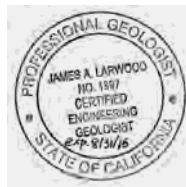
Reviews and Approvals:



---

**Phil Granger**  
Project Manager  
AECOM

Date: 03-05-2015



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**Jim Larwood, P.G. 6156, C.E.G. 1897**  
Senior Geologist  
AECOM

Date: 03-05-2015

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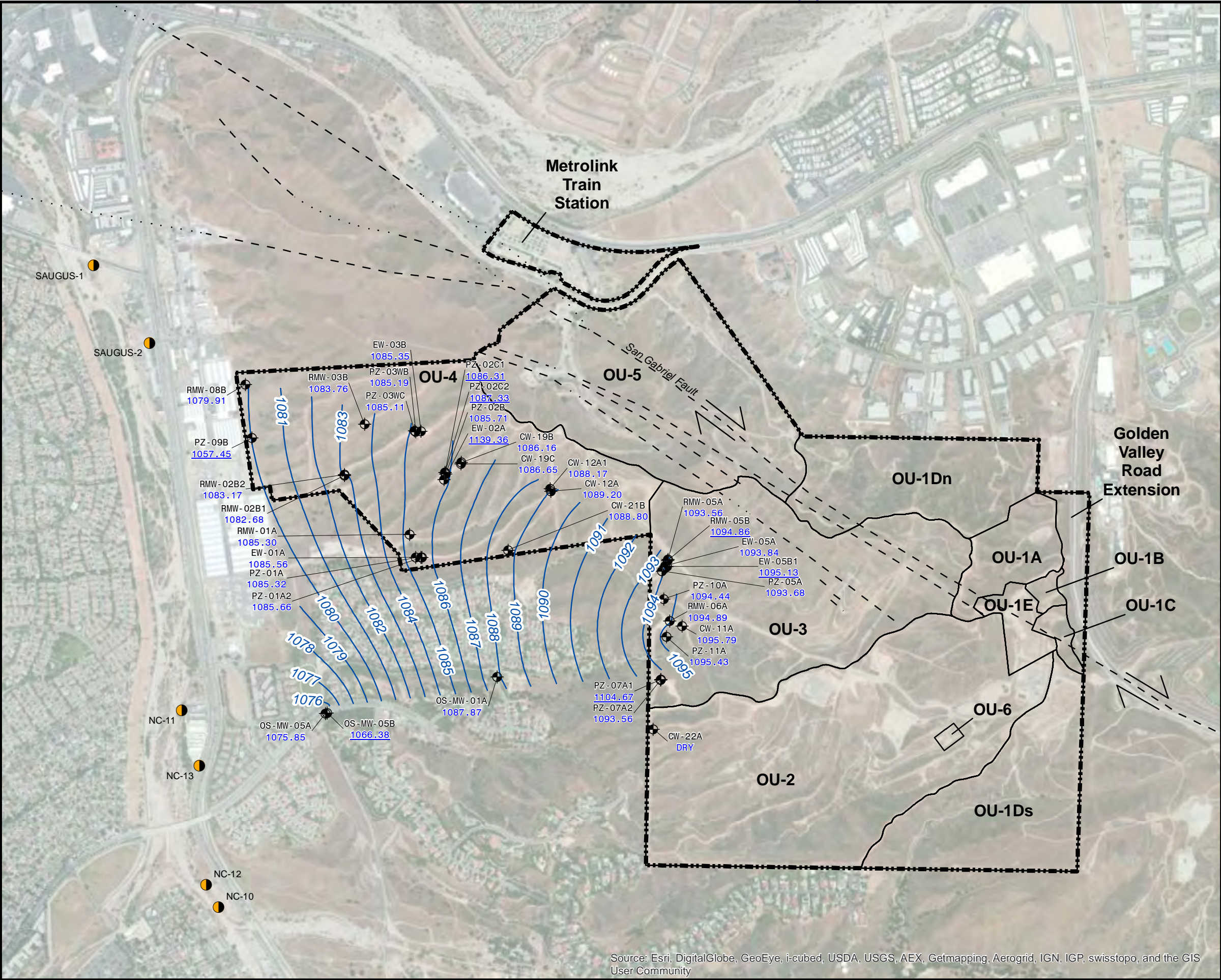
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## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                  |
| ATL   | Advanced Technology Laboratories                |
| BGS   | below ground surface                            |
| °C    | degrees Celsius                                 |
| CR    | casing radius                                   |
| CV    | casing volume                                   |
| DCE   | dichloroethene                                  |
| DI    | distilled                                       |
| DTSC  | Department of Toxic Substances Control          |
| DTW   | depth to water                                  |
| EPA   | Environmental Protection Agency                 |
| Ft    | feet  |
| Gals. | gallons   |
| HSU   | Hydrostratigraphic Unit                         |
| HWMU  | Hazardous Waste Management Unit                 |
| ID    | identification                                  |
| In    | inch  |
| MCL   | maximum contaminant level                       |
| µS/cm | microsiemens per centimeter                     |
| mL    | milliliter                                      |
| NATP  | Northern Alluvium Treatment Plant               |
| NCWD  | Newhall County Water District                   |
| NDMA  | N-Nitrosodimethylamine                          |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System |
| NTU   | nephelometric turbidity unit                    |
| OU    | operable unit                                   |
| PCE   | tetrachloroethene                               |
| QA    | quality assurance                               |
| QAPP  | Quality Assurance Project Plan                  |
| QC    | quality control                                 |
| RCRA  | Resource Conservation and Recovery Act          |
| SEC   | specific electric conductance                   |
| SM    | standard method                                 |
| SPH   | separate phase hydrocarbon                      |
| TCA   | trichloroethane                                 |
| TCE   | trichloroethene                                 |
| TD    | total depth                                     |
| TOC   | top of casing                                   |
| USACE | United States Army Corp of Engineers            |
| USEPA | United States Environmental Protection Agency   |
| VOC   | volatile organic compound                       |





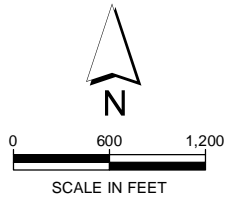
**LEGEND:**

- RMW-05A  
1,092.67
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1100
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

- GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 10-13, 2014.
- UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2014

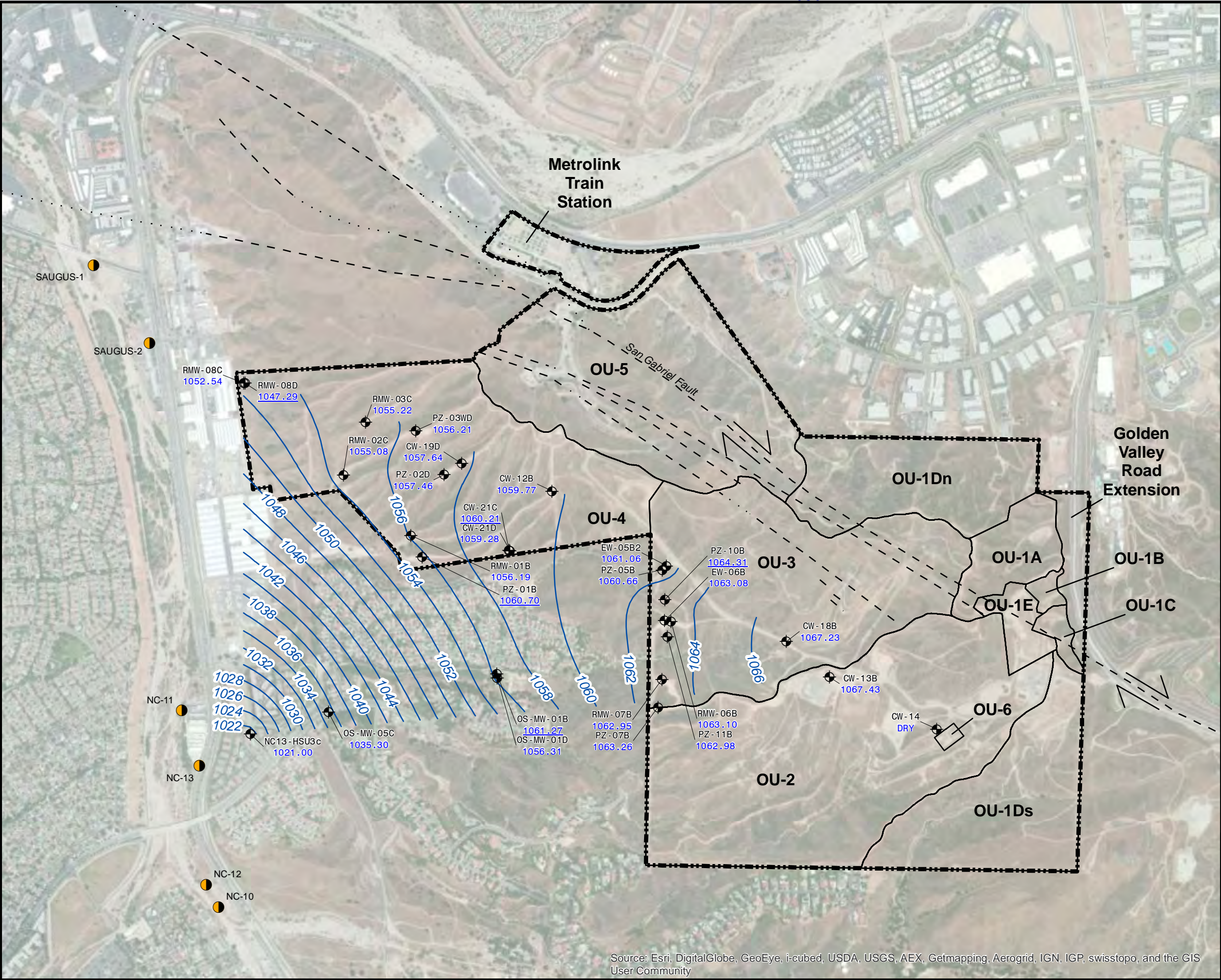
**POTENTIOMETRIC SURFACE MAP**  
**SAUGUS FORMATION HSU S-IIIa**  
**SOUTH OF THE SAN GABRIEL FAULT**  
**NOVEMBER 2014**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                      |                       |           |
|----------------------|-----------------------|-----------|
| Date 03-2015         | Whittaker Corporation | Figure    |
| Project No. 60266313 | <b>AECOM</b>          | <b>3e</b> |

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





**LEGEND:**

RMW-07B  
1,059.46

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

NC-13

PRODUCTION WELL

1070

GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)

SITE BOUNDARY

OU-5

SITE OPERABLE UNIT

FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

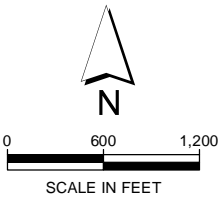
**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 10, 11, 13 AND 14, 2014.

2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL

OU OPERABLE UNIT



**FINAL**

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2014

**POTENTIOMETRIC SURFACE MAP**  
**SAUGUS FORMATION HSU S-IIIc**  
**SOUTH OF THE SAN GABRIEL FAULT**  
**NOVEMBER 2014**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                      |                       |        |
|----------------------|-----------------------|--------|
| Date 03-2015         | Whittaker Corporation | Figure |
| Project No. 60266313 | AECOM                 | 3f     |

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 101**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2013  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM Technical Services, Inc.  
999 Town and Country Road  
Orange, California 92868

March 2014



AECOM Project No. 60266313



APPROVAL PAGE

**Semi-Annual Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 101**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2013**

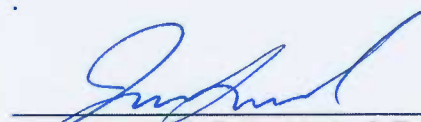
*Prepared by:*  
**AECOM Technical Services, Inc.**  
999 W. Town and Country Road  
Orange, CA 92868

Reviews and Approvals:

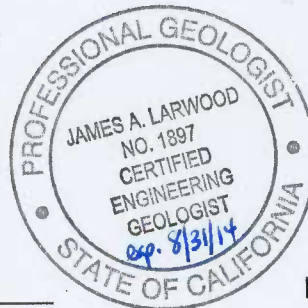


**Phil Granger**  
Project Manager  
AECOM Technical Services, Inc.

Date: 3/3/2014



**Jim Larwood**, P.G. 6156, C.E.G. 1897  
Senior Geologist  
AECOM Technical Services, Inc.



Date: 3/3/2014

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AECOM  
March 3, 2014

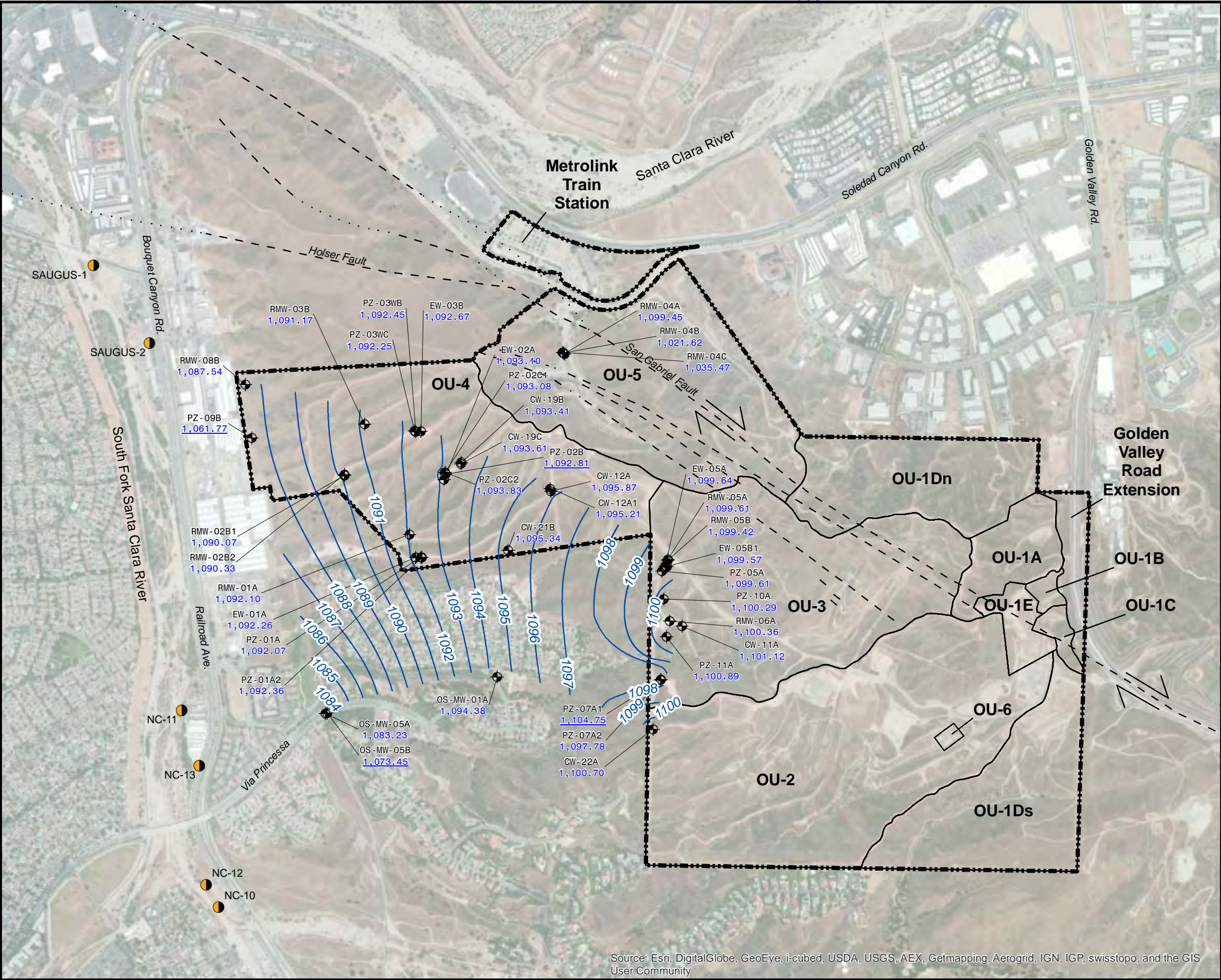
Final Semi-Annual Monitoring Report, Fourth Quarter 2013  
Former Bermite Facility

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## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                  |
| ATL   | Advanced Technology Laboratories                |
| BGS   | below ground surface                            |
| °C    | degrees Celsius                                 |
| CR    | casing radius                                   |
| CV    | casing volume                                   |
| DCE   | dichloroethene                                  |
| DI    | distilled                                       |
| DTSC  | Department of Toxic Substances Control          |
| DTW   | depth to water                                  |
| EPA   | Environmental Protection Agency                 |
| Ft    | feet  |
| Gals. | gallons   |
| HSU   | Hydrostratigraphic Unit                         |
| HWMU  | Hazardous Waste Management Unit                 |
| ID    | identification                                  |
| In    | inch  |
| MCL   | maximum contaminant level                       |
| µS/cm | microsiemens per centimeter                     |
| mL    | milliliter                                      |
| NATP  | Northern Alluvium Treatment Plant               |
| NCWD  | Newhall County Water District                   |
| NDMA  | N-Nitrosodimethylamine                          |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System |
| NTU   | nephelometric turbidity unit                    |
| OU    | operable unit                                   |
| PCE   | tetrachloroethene                               |
| QA    | quality assurance                               |
| QAPP  | Quality Assurance Project Plan                  |
| QC    | quality control                                 |
| RCRA  | Resource Conservation and Recovery Act          |
| SEC   | specific electric conductance                   |
| SM    | standard method                                 |
| SPH   | separate phase hydrocarbon                      |
| TCA   | trichloroethane                                 |
| TCE   | trichloroethene                                 |
| TD    | total depth                                     |
| TOC   | top of casing                                   |
| USACE | United States Army Corp of Engineers            |
| USEPA | United States Environmental Protection Agency   |
| VOC   | volatile organic compound                       |





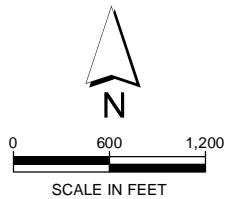
LEGEND:

- RMW-05A  
1,092.67
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1100
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

NOTES:

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 11, 13, AND 14, 2013.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



FINAL

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2013

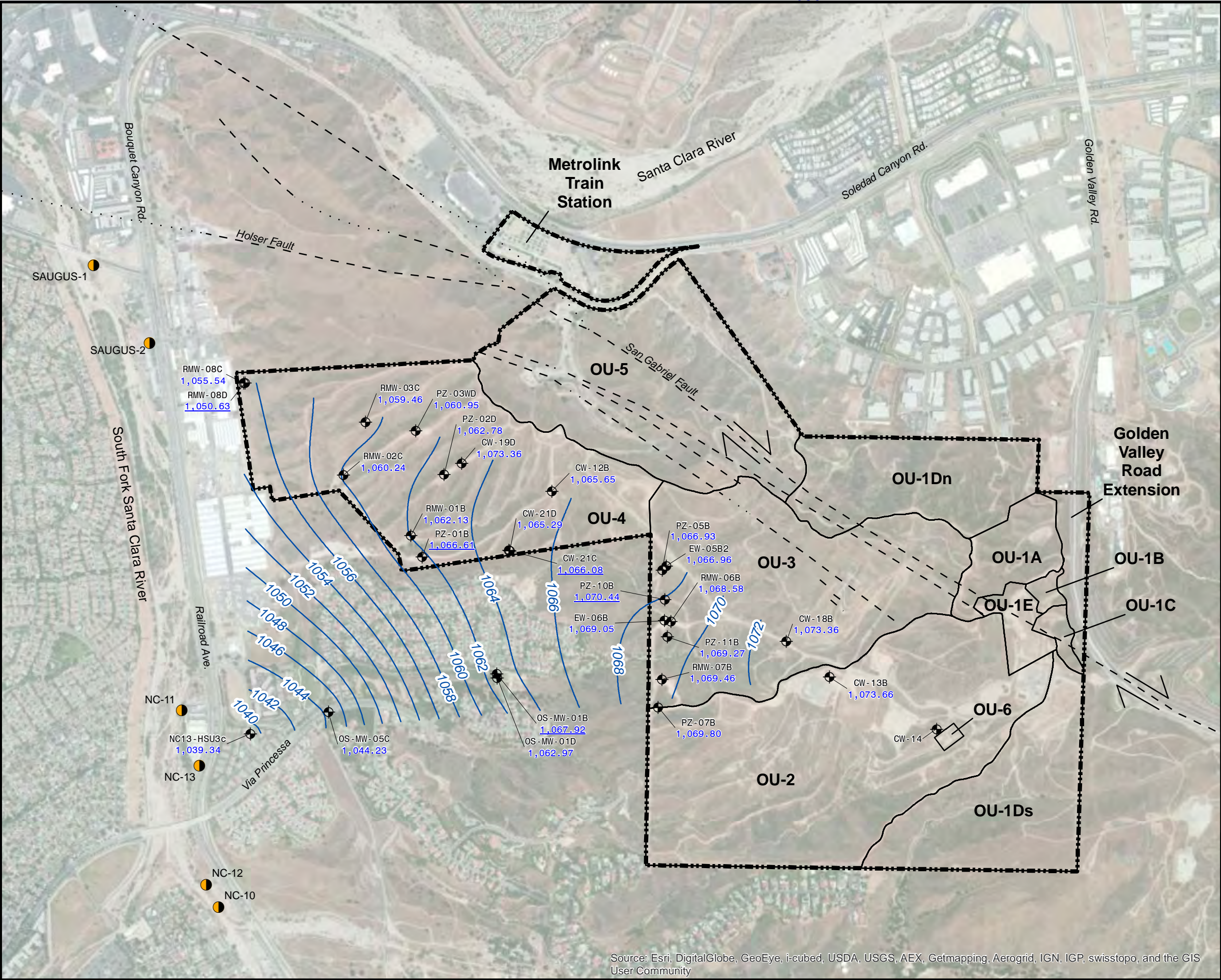
POTENTIOMETRIC SURFACE MAP  
SAUGUS FORMATION HSU S-IIIa  
SOUTH OF THE SAN GABRIEL FAULT  
NOVEMBER 2013

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                      |                       |        |
|----------------------|-----------------------|--------|
| Date 03-2014         | Whittaker Corporation | Figure |
| Project No. 60266313 | AECOM                 | 3e     |

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





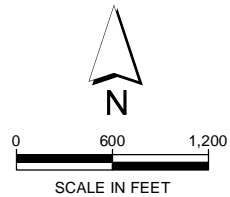
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- RMW-07B  
1,059.46
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- NC-13
- PRODUCTION WELL
- 1070
- GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)
- SITE BOUNDARY
- OU-5
- SITE OPERABLE UNIT
- FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 11, 13, 14, AND 15, 2013.
2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2013

**POTENTIOMETRIC SURFACE MAP  
SAUGUS FORMATION HSU S-IIIc  
SOUTH OF THE SAN GABRIEL FAULT  
NOVEMBER 2013**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                         |                       |           |
|-------------------------|-----------------------|-----------|
| Date 03-2014            | Whittaker Corporation | Figure    |
| Project No.<br>60266313 | <b>AECOM</b>          | <b>3f</b> |

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 97**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2012  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM Technical Services, Inc.  
999 Town and Country Road  
Orange, California 92868

April 2013



AECOM Project No. 60266313

APPROVAL PAGE

**Semi-Annual Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 97**


**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2012**

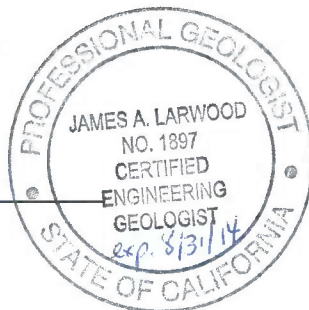
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Reviews and Approvals:

  
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Date: 4/9/2013

  
**Jim Larwood, P.G., C.E.G.**  
Senior Geologist  
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Date: 4/9/2013



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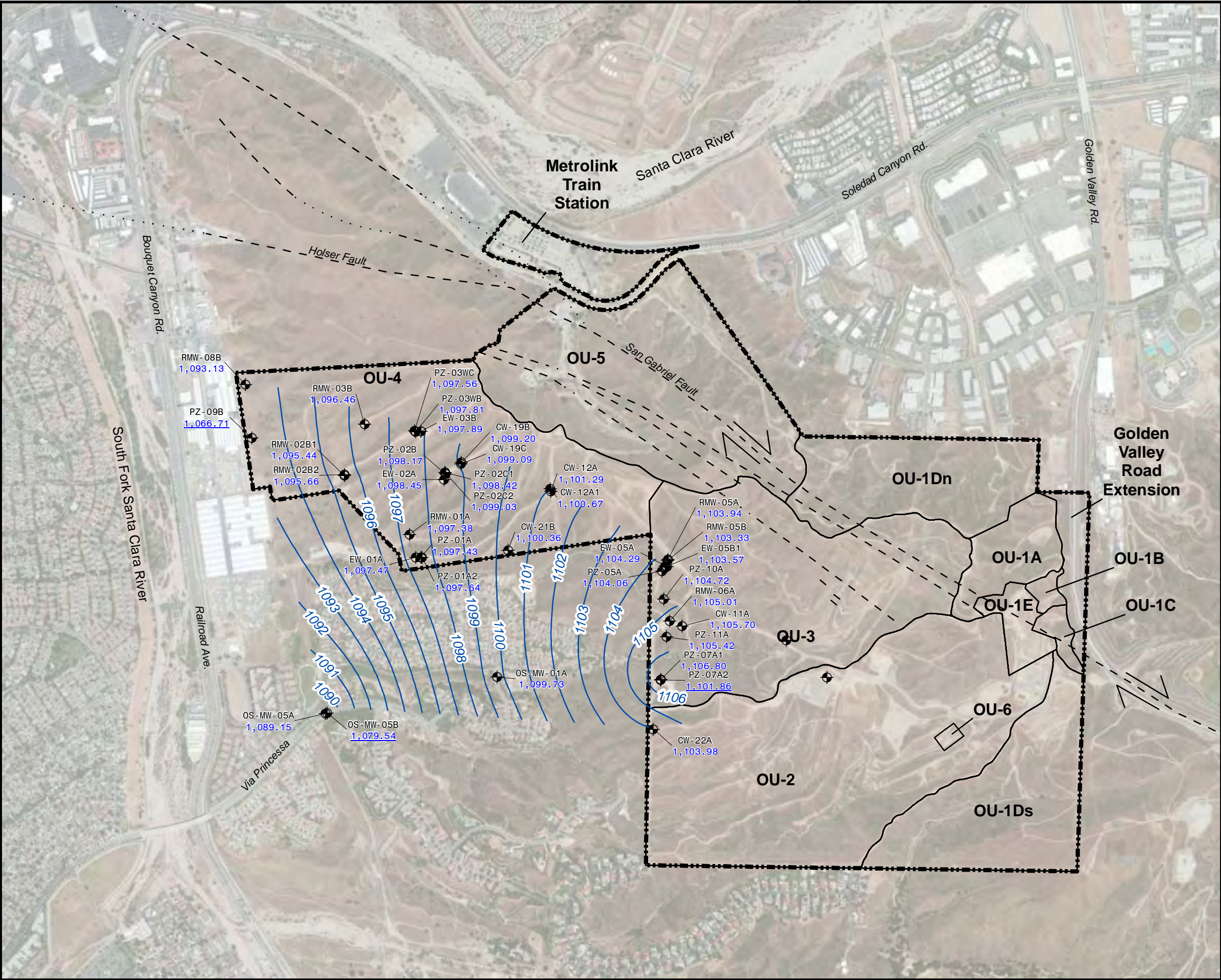
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## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                  |
| ATL   | Advanced Technology Laboratories                |
| BGS   | below ground surface                            |
| °C    | degrees Celsius                                 |
| CR    | casing radius                                   |
| CV    | casing volume                                   |
| DCE   | dichloroethene                                  |
| DI    | distilled                                       |
| DTSC  | Department of Toxic Substances Control          |
| DTW   | depth to water                                  |
| EPA   | Environmental Protection Agency                 |
| Ft    | feet  |
| Gals. | Gallons   |
| HWMW  | Hazardous Waste Management Unit                 |
| HSU   | Hydrostratigraphic Unit                         |
| ID    | identification                                  |
| In    | Inch  |
| MCL   | maximum contaminant level                       |
| µS/cm | microsiemens per centimeter                     |
| mL    | milliliter                                      |
| NATP  | Northern Alluvium Treatment Plant               |
| NDMA  | N-Nitrosodimethylamine                          |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System |
| NTU   | nephelometric turbidity unit                    |
| OU    | operable unit                                   |
| PCE   | tetrachloroethene                               |
| QA    | quality assurance                               |
| QAPP  | Quality Assurance Project Plan                  |
| QC    | quality control                                 |
| RCRA  | Resource Conservation and Recovery Act          |
| SEC   | specific electric conductance                   |
| SM    | standard method                                 |
| SPH   | separate phase hydrocarbon                      |
| TCA   | trichloroethane                                 |
| TCE   | trichloroethene                                 |
| TD    | total depth                                     |
| TOC   | top of casing                                   |
| USACE | United States Army Corp of Engineers            |
| USEPA | United States Environmental Protection Agency   |
| VOC   | volatile organic compound                       |





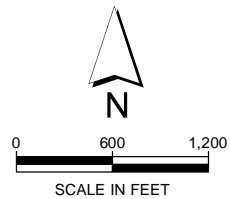
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- CW-11A  
1110.31
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- 1100
- GROUNDWATER ELEVATION CONTOUR  
(DASHED WHERE INFERRED (FEET ABOVE MSL))
- SITE BOUNDARY
- OU-5**
- SITE OPERABLE UNIT
- SAN GABRIEL FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 12, 13 AND 21, 2012.
2. UNDERLINED GROUNDWATER ELEVATIONS APPEAR ANOMALOUS AND ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

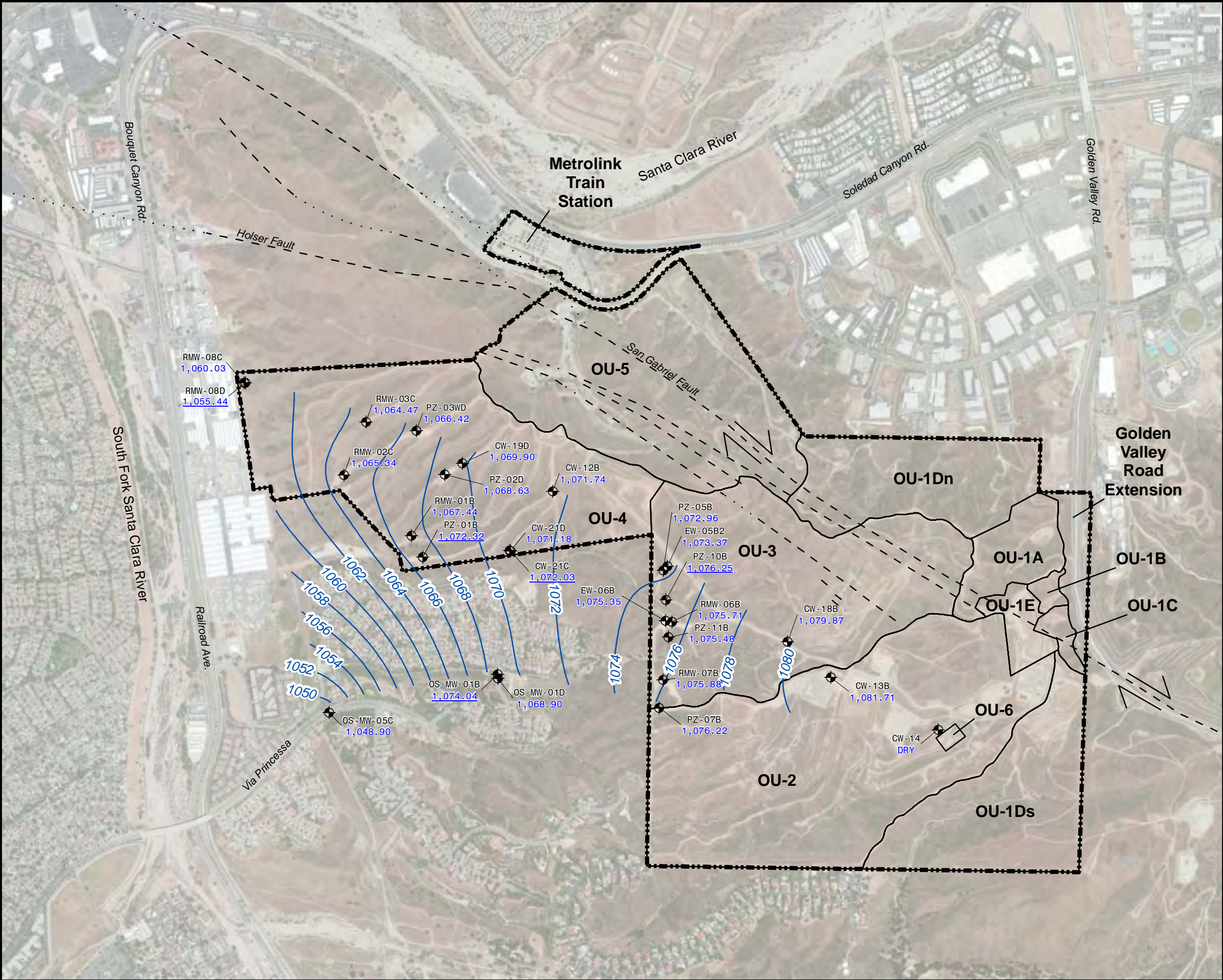
SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2012

**POTENTIOMETRIC SURFACE MAP**  
**SAUGUS FORMATION HSU S-IIIa**  
**SOUTH OF THE SAN GABRIEL FAULT**  
**NOVEMBER, 2012**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|                         |                       |           |
|-------------------------|-----------------------|-----------|
| Date 03-2013            | Whittaker Corporation | Figure    |
| Project No.<br>60266313 | <b>AECOM</b>          | <b>3e</b> |





**LEGEND:**

CW-13B  
1087.75

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

1100

GROUNDWATER ELEVATION CONTOUR  
(DASHED WHERE INFERRED (FEET ABOVE MSL))

SITE BOUNDARY

**OU-5**

SITE OPERABLE UNIT

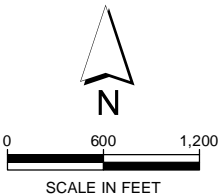
SAN GABRIEL FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 12, 13 AND 20, 2012.

2. UNDERLINED GROUNDWATER ELEVATIONS APPEAR ANOMALOUS AND ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

|  |                       |                   |
|--|-----------------------|-------------------|
| SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2012  |                       |                   |
| <b>POTENTIOMETRIC SURFACE MAP</b><br>SAUGUS FORMATION HSU S-IIIc<br>SOUTH OF THE SAN GABRIEL FAULT<br>NOVEMBER, 2012 |                       |                   |
| FORMER BERMITE FACILITY  |                       | SANTA CLARITA, CA |
| Date 03-2013   | Whittaker Corporation | Figure            |
| Project No.<br>60266313  | <b>AECOM</b>          | <b>3f</b>         |



# **Semi-Annual Groundwater Monitoring Report - Operable Unit 7 and Area 317 RCRA Monitoring Report No. 93**

**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California**

**Fourth Quarter 2011  
(October 1 – December 31)**

**Prepared for:**

California Environmental Protection Agency  
Department of Toxic Substance Control  
Chatsworth, California

**On behalf of:**

Whittaker Corporation  
Simi Valley, California

**Prepared by:**

AECOM Technical Services, Inc.  
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Orange, California 92868

April 2012



AECOM Project No. 60211861

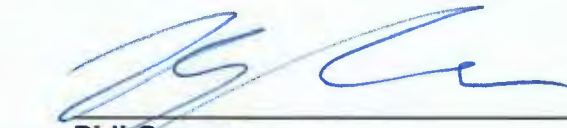
APPROVAL PAGE

**Semi-Annual Groundwater Monitoring  
Report - Operable Unit 7  
and  
Area 317 RCRA Monitoring  
Report No. 93**


**Former Bermite Facility  
22116 Soledad Canyon Road  
Santa Clarita, California  
Fourth Quarter 2011**

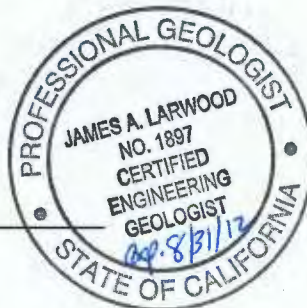
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Reviews and Approvals:

  
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AECOM Technical Services, Inc.

Date: 4/9/2012

  
**James Larwood, P.G., C.E.G.**  
Senior Geologist  
AECOM Technical Services, Inc.



Date: 4/9/2012

AECOM  
April 9, 2012

Final Semi-Annual Monitoring Report, Fourth Quarter 2011  
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Final Semi-Annual Monitoring Report, Fourth Quarter 2011  
Former Bermite Facility

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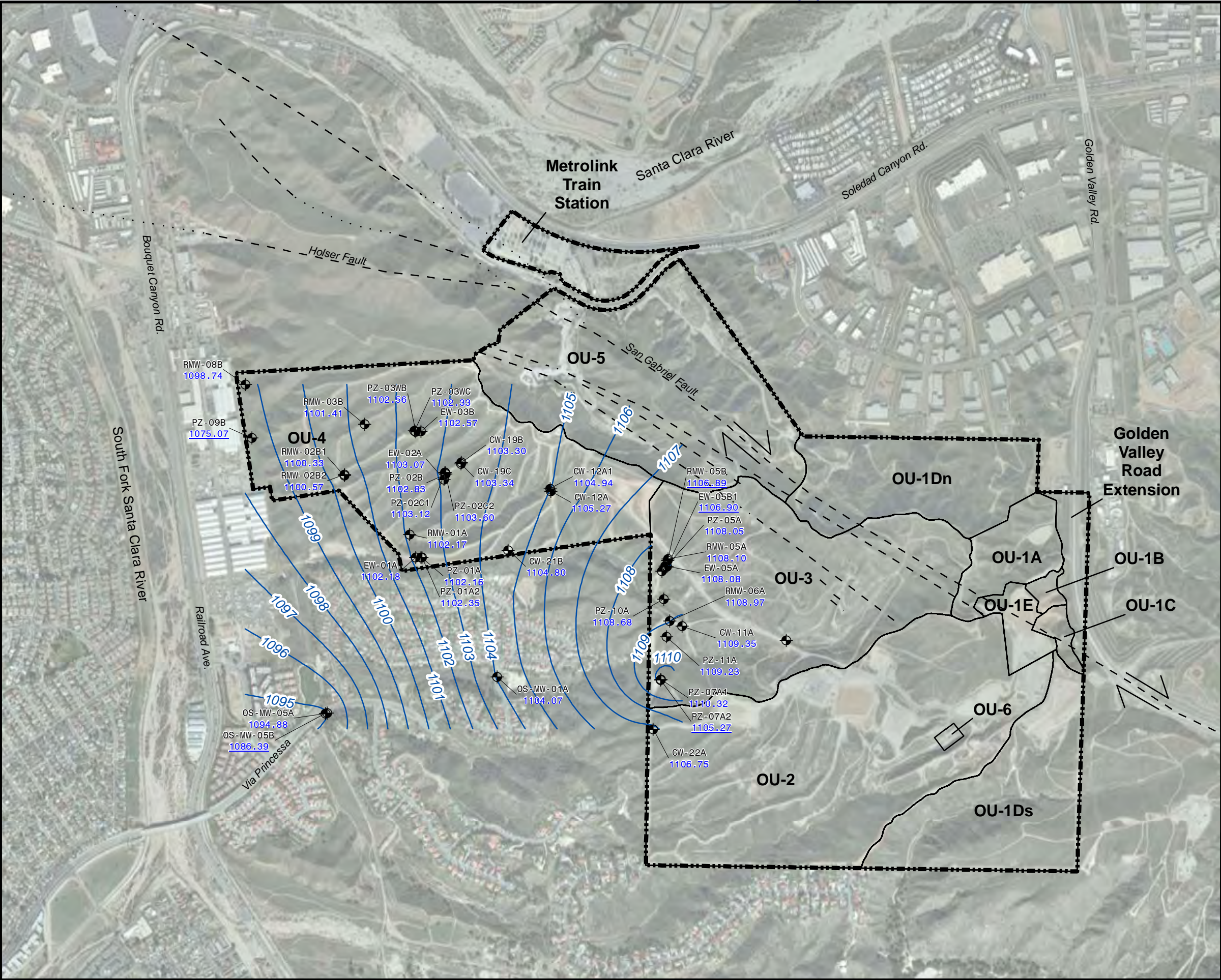
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April 9, 2012

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## ABBREVIATIONS AND ACRONYMS

|       |   |
|-------|---|
| AECOM | AECOM Technical Services, Inc.                  |
| ATL   | Advanced Technology Laboratories                |
| BGS   | below ground surface                            |
| °C    | degrees Celsius                                 |
| CDPH  | California Department of Public Health          |
| CR    | casing radius                                   |
| CV    | casing volume                                   |
| DCE   | dichloroethene                                  |
| DI    | distilled                                       |
| DTSC  | Department of Toxic Substances Control          |
| DTW   | depth to water                                  |
| EPA   | Environmental Protection Agency                 |
| Ft    | feet  |
| Gals. | gallons   |
| HSU   | Hydrostratigraphic Unit                         |
| ID    | identification                                  |
| In    | Inch  |
| µS/cm | microsiemens per centimeter                     |
| mL    | milliliter                                      |
| NATP  | Northern Alluvium Treatment Plant               |
| NDMA  | N-Nitrosodimethylamine                          |
| No.   | number  |
| NPDES | National Pollutant Discharge Elimination System |
| NTU   | nephelometric turbidity unit                    |
| OU    | operable unit                                   |
| PCE   | tetrachloroethene                               |
| QA    | quality assurance                               |
| QAPP  | Quality Assurance Project Plan                  |
| QC    | quality control                                 |
| RCRA  | Resource Conservation and Recovery Act          |
| SEC   | specific electric conductance                   |
| SM    | standard method                                 |
| SPH   | separate phase hydrocarbon                      |
| TCA   | trichloroethane                                 |
| TCE   | trichloroethene                                 |
| TD    | total depth                                     |
| TOC   | top of casing / total organic carbon            |
| TOX   | total organic halides                           |
| USACE | United States Army Corp of Engineers            |
| USEPA | United States Environmental Protection Agency   |
| VOC   | volatile organic compound                       |





**LEGEND:**

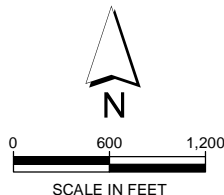
- CW-11A  
1110.31
- MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)
- 1100
- GROUNDWATER ELEVATION CONTOUR  
(DASHED WHERE INFERRED (FEET ABOVE MSL))
- SITE BOUNDARY
- OU-5**
- SITE OPERABLE UNIT
- SAN GABRIEL FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 28-30 AND DECEMBER 1-2, 2011.
2. UNDERLINED GROUNDWATER ELEVATIONS APPEAR ANOMALOUS AND ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL

OU OPERABLE UNIT



**FINAL**

SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2011

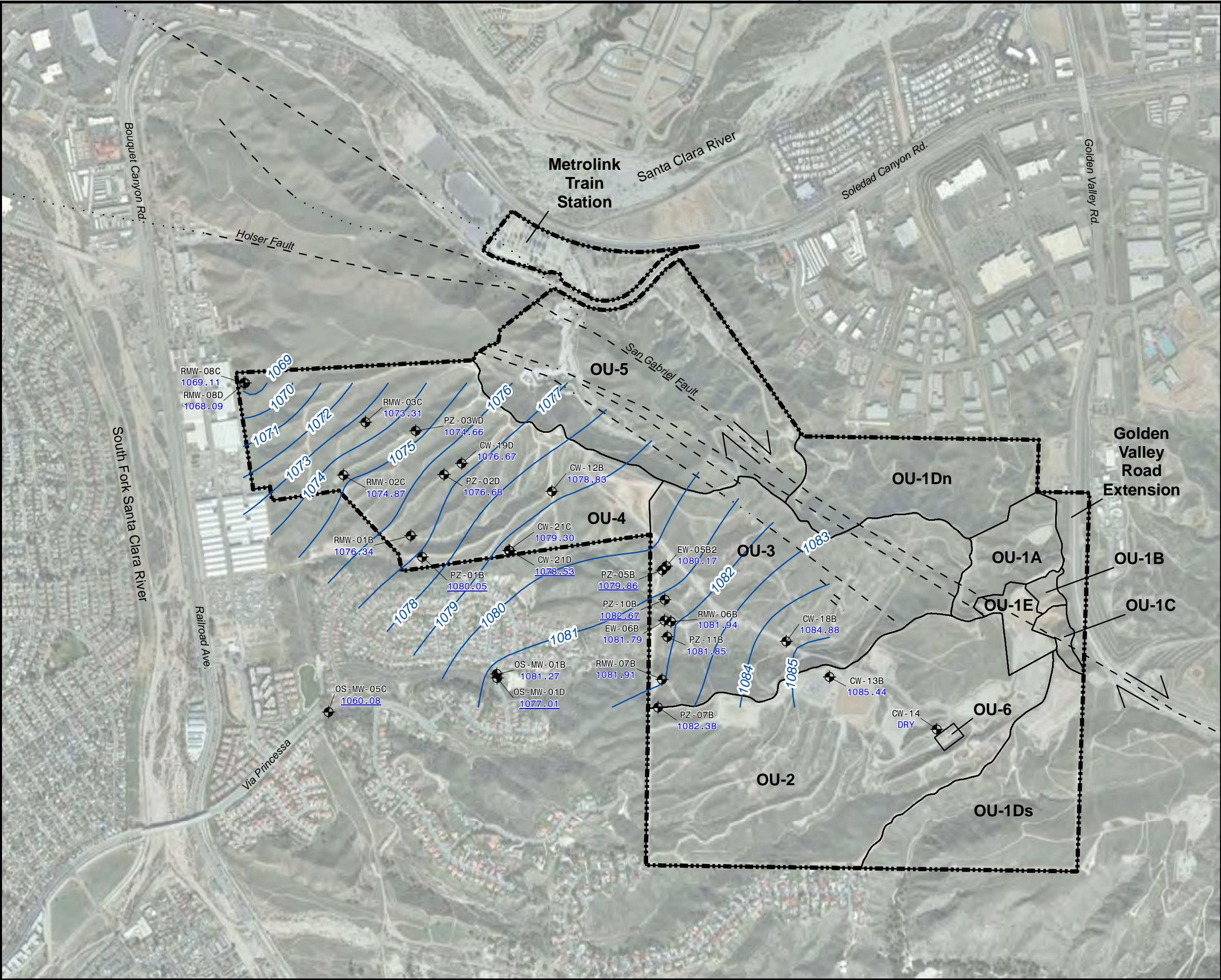
**POTENTIOMETRIC SURFACE MAP  
FOURTH QUARTER 2011**

**SAUGUS FORMATION HSU S-IIIa  
SOUTH OF THE SAN GABRIEL FAULT**

FORMER BERMITE FACILITY SANTA CLARITA, CA

|             |          |                       |           |
|-------------|----------|-----------------------|-----------|
| Date        | 4-12     | Whittaker Corporation | Figure    |
| Project No. | 60211861 | <b>AECOM</b>          | <b>3e</b> |





**LEGEND:**

CW-13B  
1087.75

MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

1100

GROUNDWATER ELEVATION CONTOUR  
(DASHED WHERE INFERRED (FEET ABOVE MSL))

SITE BOUNDARY

**OU-5**

SITE OPERABLE UNIT

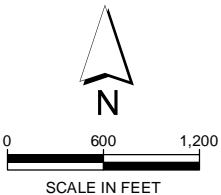
SAN GABRIEL FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

1. GROUNDWATER ELEVATIONS WERE RECORDED ON NOVEMBER 28-30 AND DECEMBER 1-2, 2011.

2. UNDERLINED GROUNDWATER ELEVATIONS APPEAR ANOMALOUS AND ARE NOT USED FOR CONTOURING.

MSL MEAN SEA LEVEL  
OU OPERABLE UNIT



**FINAL**

|   |          |                       |
|---|----------|-----------------------|
| SEMI-ANNUAL GROUNDWATER MONITORING REPORT - 4TH QUARTER, 2011 |          |                       |
| <b>POTENTIOMETRIC SURFACE MAP<br/>FOURTH QUARTER 2011</b>     |          |                       |
| SAUGUS FORMATION HSU S-IIIc<br>SOUTH OF THE SAN GABRIEL FAULT |          |                       |
| FORMER BERMITE FACILITY                                       |          | SANTA CLARITA, CA     |
| Date  | 4-12     | Whittaker Corporation |
| Project No.   | 60211861 | <b>AECOM</b>          |
|   |          | Figure<br>3f          |



**EXHIBIT AA**





A north arrow pointing upwards with the letter 'N' below it. Below the arrow is a scale bar with markings at 0, 600, and 1,200. The text 'SCALE IN FEET' is centered below the scale bar.

FINAL

ANNUAL GROUNDWATER MONITORING REPORT - 2ND QUARTER, 2019

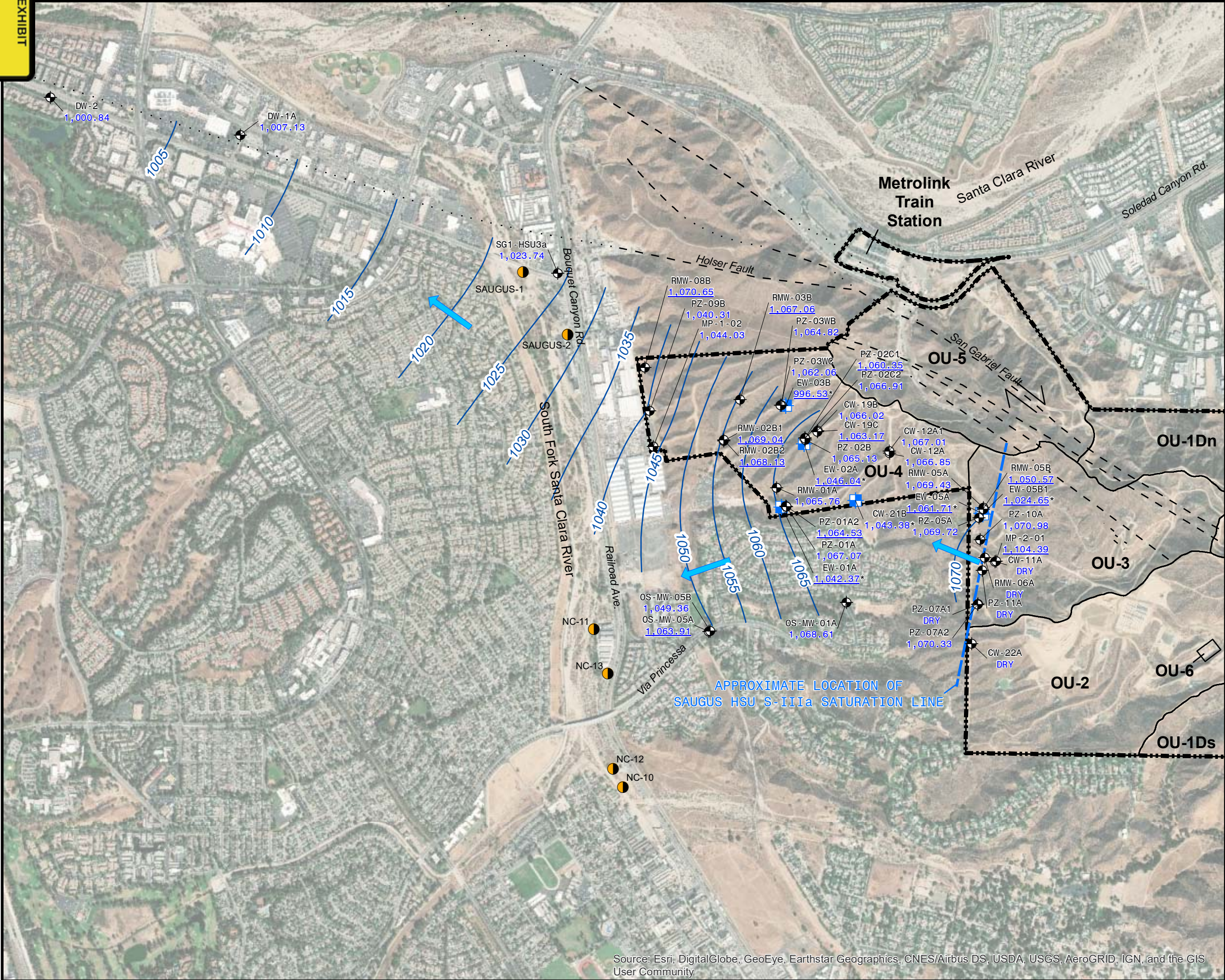
**POTENTIOMETRIC SURFACE MAP**  
**SAUGUS FORMATION HSU S-IIIc**  
**SOUTH OF THE SAN GABRIEL FAULT**  
**MAY 2019**

FORMER BERMITE FACILITY

|                         |                       |           |
|-------------------------|-----------------------|-----------|
| Date 10-2019            | Whittaker Corporation | Figure    |
| Project No.<br>60266313 | <b>AECOM</b>          | <b>3f</b> |



EXHIBIT  
0318



**LEGEND:**

RMW-05A  
1,069.43 MONITORING WELL LOCATION  
GROUNDWATER ELEVATION (FEET ABOVE MSL)

CW-21B EXTRACTION WELL

NC-13 PRODUCTION WELL

1080 GROUNDWATER ELEVATION CONTOUR  
(FEET ABOVE MSL)

APPROXIMATE LOCATION OF SAUGUS HSU S-IIIa  
SATURATION LINE

APPROXIMATE DIRECTION OF  
GROUNDWATER FLOW

SITE BOUNDARY

**OU-5** SITE OPERABLE UNIT

FAULT ZONE  
DASHED WHERE APPROXIMATE  
DOTTED WHERE CONCEALED

**NOTES:**

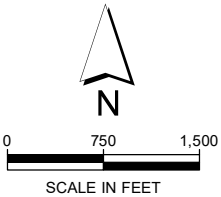
1. GROUNDWATER ELEVATIONS WERE RECORDED ON  
MAY 23-24 AND JUNE 17, 20, AND 24, 2019.

2. UNDERLINED GROUNDWATER ELEVATIONS ARE NOT  
USED FOR CONTOURING.

\* EXTRACTION WELL PUMPING AT THE TIME OF  
GAUGING.

MSL MEAN SEA LEVEL

OU OPERABLE UNIT



FINAL

|   |                       |           |
|---|-----------------------|-----------|
| ANNUAL GROUNDWATER MONITORING REPORT - 2ND QUARTER, 2019  |                       |           |
| <b>POTENTIOMETRIC SURFACE MAP</b><br><b>SAUGUS FORMATION HSU S-IIIa</b><br><b>SOUTH OF THE SAN GABRIEL FAULT</b><br><b>MAY 2019</b> |                       |           |
| FORMER BERMITE FACILITY   | SANTA CLARITA, CA     |           |
| Date 10-2019  | Whittaker Corporation | Figure    |
| Project No.<br>60266313   | <b>AECOM</b>          | <b>3e</b> |

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



**EXHIBIT BB**

**STEADFAST INSURANCE COMPANY  
AS SUBROGEE OF  
WHITTAKER CORPORATION, ET AL  
V.  
UNITED STATES OF AMERICA, ET AL  
No. CV06-4686 AHM (RZx)**

**and**

**AMERICAN INTERNATIONAL SPECIALTY LINES INSURANCE CO.  
V.  
UNITED STATES OF AMERICA, ET AL  
No. CV09-01734 AHM (RZx)**

**Supplemental Report Concerning Non-Perchlorate Contamination**

**November 16, 2009**

**1.0 Introduction**

On June 8, 2009, I submitted my expert report in the referenced matter on behalf of American International Specialty Lines Insurance Company ("AISLIC"), summarizing historical information concerning manufacturing operations and resulting environmental contamination by perchlorate at the former Whittaker-Bermite ("Bermite") plant in Santa Clarita, California (the "Site"). I adopt the information contained in that report by reference herein.

Since that time, the Court has ruled that Site contaminants of concern other than perchlorate should also be considered for cost recovery and contribution under relevant provisions of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA" or "Superfund"). This report presents my supplemental analysis of the historical information presented in the June 8 report, together with relevant information concerning non-perchlorate contaminants, resulting response actions and their costs, and additional factors the Court may wish to consider in evaluating the CERCLA liability of Defendants and in developing an equitable allocation of response costs.

Discovery has continued in this matter and I am aware of depositions and additional document production that I have not yet had the opportunity to review. I am also aware that additional electronic discovery has been Ordered which may make additional historical documents available. To the extent relevant information becomes available, I reserve the possibility of further supplementation of the analysis presented herein. My credentials, resume and billing rate presented in my earlier report remain current, but I have attached an updated listing of matters in which I have provided testimony during the past four years (See Exhibit 1).

then prepared, loaded and pressed into the appropriate housing configuration for the various devices and models thereof, and were then tested for performance characteristics.

Wastes generated included explosive powders, wash water, treatment chemicals and precipitates, contaminated disposable tools, wipes, test items and reject units.<sup>10</sup> Energetic materials were burned and inert casings were recycled or landfilled for disposal. Production buildings for these devices included Nos. 58-61, 124 and 125.<sup>11</sup>

**23 Ammunition** — Military ammunition was assembled in large quantities at the site from 1942 through at least 1979. Production began in mid-July 1942 to assemble 20 mm high explosive ("HE") anti-aircraft ammunition, and was expanded the following year to produce 20 mm high explosive incendiary ("HEI") munitions.<sup>12</sup> During WWII, all of the components were supplied by the military, with Bermite's contracts specifying assembly details and crating procedures for shipment. The only known process operation conducted during this period was solvent degreasing, utilizing trichloroethylene ("TCE") to remove grease from the Government-furnished projectiles prior to assembly<sup>13</sup>

Following WWII, Bermite continued to produce 20 mm ammunition for the Navy, but there is an indication that the company also had been manufacturing some of the required component parts, such as primers and HEI pellets. These devices utilized RDX and potassium perchlorate in their production.<sup>14</sup>

During 1977, Bermite applied for and received a Radioactive Materials License to possess up to 80,000 pounds of depleted uranium ("DU").<sup>15</sup> The DU was to be furnished by the Government in the form of aluminum clad, incendiary projectiles for assembly into 30 mm Armor Piercing Incendiary ("API") military ammunition.<sup>16</sup> Production of this ammunition was concluded in December 1979.<sup>17</sup>

Wastes from ammunition production included spent degreasing solvents, powder, expended test items and rejected ammunition. For the 30 mm API program (also known as GAU-8), the Government required that 0.5% of the assembled rounds be test fired as part of the quality assurance program.<sup>18</sup> This testing was performed by firing selected rounds utilizing a "test fixture" and "barrel" (i.e., a gun) provided by the Government,<sup>19</sup> over a 200-meter range into a specially designed "bullet catcher" for collection and disposal of test projectiles.<sup>20</sup>

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<sup>10</sup> *Supra* Note 4.

<sup>11</sup> *Supra* Note 5.

<sup>12</sup> See discussion and references in Section 3.3 of Robert Zoch expert report, June 8, 2009.

<sup>13</sup> Jack H. Arnold, Deposition Transcript, April 5, 2002, page 44.

<sup>14</sup> Chemical and Waste Summary by Product Category, Ammunition Rounds (WE0228353).

<sup>15</sup> State of California Department of Health, Radioactive Material License, September 12, 1977 (WE0316559).

<sup>16</sup> Radioactive Materials License, Standard Safety Procedure (SSP) #1 (WE0072196-200).

<sup>17</sup> Zoyd R. Luce (Whittaker-Bermite) letter to Walter L Milne, December 4, 1979 (WE0072173).

<sup>18</sup> *Supra* Note 16.

<sup>19</sup> Max Calkins, Deposition Transcript, March 20, 2009, page 219; See also Material Specification for Igniter Mix, IB-52, February 10, 1977 (ST084763-79).

<sup>20</sup> Radioactive Materials License, Standard Safety Procedure #2 (WE0072202-06).

**EXHIBIT CC**



UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA

--oOo--

SANTA CLARITA VALLEY WATER

AGENCY,

Plaintiff,

vs.

Case No.

WHITTAKER CORPORATION,

2:18-cv-6825-GW(RAOx)

Defendant,

\_\_\_\_\_/

AND RELATED CASES.

\_\_\_\_\_/

VIDEO-RECORDED DEPOSITION OF GAYNOR DAWSON, P.E.

VERITEXT VIRTUAL

FRIDAY, SEPTEMBER 18, 2020

Reported by:

Anrae Wimberley, CSR No. 7778

Job No. 4257939

1 1935 through the end of 1941? 09:36:53

2 A. I have not.

3 Q. And then this -- who was the owner of this  
4 facility in 1942 and 1943?

5 A. Do not recall the name. 09:37:10

6 Q. At some point in time, did the business  
7 that was operating at the Whittaker site in the  
8 1940s enter into one or more contracts with the  
9 federal government to manufacture or assemble  
10 munitions of any kind? 09:37:30

11 A. Yes.

12 Q. And when do you believe that occurred?

13 A. My recollection, it was in the -- '44 time  
14 frame is the one that sticks in my mind for the  
15 production of ammunition. And I believe it was 09:37:46  
16 related to -- don't remember the exact caliber, but  
17 like 30-millimeter round. It was a type of  
18 artillery shell, as I recall.

19 Q. Was the date that -- the business that was  
20 operating during World War II, was the date that it 09:38:10  
21 began manufacturing ammunition for the federal  
22 government important to any of the work you did in  
23 this case?

24 A. Only to the extent that it was the basis  
25 for analyses and conclusions that were reached by 09:38:29

1 several other experts, in particular Jay Brigham and  
2 Robert Zoch, who conducted a pretty extensive  
3 survey -- the information was available on products  
4 purchased and products produced in those time frames  
5 relative to the insurance litigation that took place  
6 in the 2003 time frame, 2003 through 2010, I  
7 believe.

09:38:35

8 Q. So it would be important to you if it was  
9 important to experts in another case, not this case?

09:38:51

10 A. It was important to me in part because it  
11 was relied on in the findings of fact and  
12 conclusions by the court in that case.

09:39:08

13 Q. And you refer to that -- what did you call  
14 it, the insurance case?

15 A. Right. It was the -- I believe it was  
16 Whittaker's insurers in a case with the U.S.  
17 government, Department of Defense.

09:39:19

18 Q. So if another expert in this case were to  
19 identify July 1942 as the time frame in which the  
20 prior owner entered into a contract with the federal  
21 government to produce wartime ammunition, do you  
22 have a basis today to say that that's wrong?

09:39:40

23 A. No. I believe that's -- it was certainly  
24 after U.S. involvement in the war.

25 Q. You mean after Pearl Harbor or some other

09:39:58

Page 15

1 the single largest product produced by Whittaker, 09:44:28  
2 and that would have been the Navy.

3 Q. Right. Sorry I wasn't clear.

4 Focusing on World War II or the period,  
5 say, through 1945. 09:44:37

6 Are you with me?

7 A. Yes.

8 Q. And my question was simply, when you refer  
9 to the "Army," are you distinguishing the Army from  
10 the Navy? 09:44:48

11 A. I do not recall whether there were any  
12 Navy rounds in the munitions that they were  
13 building. They could well have been for aircraft  
14 guns on the Naval ships. I guess it would be more  
15 correct for me to have said Department of Defense. 09:45:08

16 Q. Okay. But, again, you haven't seen any  
17 contract between Bermite and the Navy for any period  
18 of time; correct?

19 A. That is correct. I've seen references to  
20 them in the findings of fact and conclusions, but 09:45:23  
21 I've not seen the actual documents themselves.

22 Q. And what product or products do you  
23 believe Bermite was commissioned to manufacture for  
24 either the Army or the Navy between mid 1942 and the  
25 end of 1945? 09:45:43

Page 19



1 A. No, I cannot. 10:05:09

2 Q. You haven't seen any inventory for that

3 period?

4 A. I have not.

5 Q. And your understanding as to what 10:05:16

6 equipment may or may not have been on-site in 1945

7 derives from your reading of those two expert

8 reports you mentioned for Zoch and Brigham?

9 A. That's correct.

10 Q. And you found Mr. Zoch to be a reliable 10:05:32

11 source of information?

12 A. Both of them are quoted in the findings of

13 fact and conclusions, and I assume, therefore, they

14 were held to be knowledgeable and experts at the

15 time. 10:05:51

16 Q. Do you have any reason to believe Mr. Zoch

17 was not a reliable source of information?

18 A. I am certainly aware that he accepted the

19 testimony of one individual who thought that there

20 may have been solvent used that went back to World 10:06:11

21 War II, but that was an individual from the 1980s

22 and '90s. And his reflection was made in the 2000

23 time frame where he simply said, I believe it could

24 have been present at that time frame.

25 And so I tend to accept Mr. Brigham's 10:06:29

1 at the very top, you say, "In reaching the opinions 11:20:23  
2 expressed herein, I used and applied  
3 industry-accepted methodologies."

4 Do you see that?

5 A. Yes. 11:20:33

6 Q. And we started to get into this earlier  
7 today, but can you list for us what you are  
8 referring to when you say "industry-accepted  
9 methodologies."

10 A. Well, it starts with understanding the 11:20:44  
11 manufacturing processes that were applied at the  
12 facility, the known characterization of waste  
13 production from those types of facilities and the  
14 findings of facts and conclusions that were  
15 published from the insurance case in this matter. 11:21:10

16 Q. So it's part -- there's an  
17 industry-accepted methodology that says one should  
18 accept findings of fact and conclusions of law? Is  
19 that an accepted methodology?

20 A. I think what the accepted methodology 11:21:34  
21 would be would be to acknowledge and, barring strong  
22 evidence to suggest it's wrong, accept the  
23 conclusions that were generated as a result of  
24 arbitration between known experts.

25 Q. You would agree that's a legal process, 11:22:01

1 of Whittaker. He says they have a don't-destroy 02:36:45  
2 policy, a file retention, record retention policy.  
3 So I have no idea why those records don't exist.  
4 All I know is that I have requested them and no one  
5 can put their hands on them. 02:37:01

6 BY MR. RICHARD:

7 Q. Did you learn that there were some records  
8 on-site that total at least 110,000 pages of  
9 materials that have, as of last Friday, just been  
10 produced in this case? 02:37:16

11 A. I have no knowledge of that.

12 Q. Okay. You didn't spend the weekend  
13 looking at those?

14 A. No.

15 Q. Okay. So it's fair to say you knew more 02:37:29  
16 about the operations and contracts at each of the  
17 three solid rocket facilities than you do for  
18 Bermite; correct?

19 A. Yes, sir.

20 Q. And so at least with respect to 02:37:46  
21 operational or disposal-of-waste practices, you'd  
22 have to be a little hesitant about drawing  
23 comparisons between those other facilities and  
24 Bermite/Whittaker, would you not?

25 A. Well, what I would say is that the -- I am 02:38:05

1 familiar with the fact that all of those facilities 02:38:10  
2 came under the same contractual language required  
3 and they followed the DoD safety manual. And in the  
4 case of Whittaker, the findings of fact and

5 conclusions specifically stated that waste 02:38:28  
6 management and safety practices were done in  
7 accordance with the DoD manual and that, in fact,  
8 DCAS had audited, including the burn area, and found  
9 them in compliance.

10 And so I believe that the point of 02:38:43  
11 consistency is that all of them were working towards  
12 that same DoD manual, as obligated under their  
13 contracts.

14 Q. So, for example, did Lockheed have leaking  
15 sumps that led to chlorinated solvents being 02:39:02  
16 released into the environment?

17 A. They did not have -- they had a sump, yes,  
18 a large sump that at least overflowed once because  
19 of flooding conditions. But I don't recall if there  
20 was an unlined facility there. Albeit, the DoD 02:39:25  
21 manual specifically says the kinds of water that  
22 were being sent to that sump could, in fact, be sent  
23 to an infiltration pond.

24 Q. I haven't asked you about the DoD yet.

25 I'm just trying to understand whether you 02:39:44



1 5 parts per billion, I believe. So let's round that 03:59:26  
2 up to 100,000 pounds of water, just to make this  
3 easier.

4 So you're still -- not six orders of  
5 magnitude. Parts per billion is one part in nine 03:59:47  
6 orders of magnitude. So you're less than  
7 .001 pounds. It's a small number.

8 Q. Couple salt shakers maybe, huh?

9 A. Well, let's see. TCE is, let's say, is  
10 12 pounds per gallon. So a thousandth of that is 04:00:17  
11 really small. I don't think I want to be held to  
12 the math I'm doing in my head at this point.

13 Q. No, but that was helpful. You made me  
14 think about -- I wish I had a swimming pool.

15 But not very much. 04:00:45

16 A. That's correct.

17 Q. I want to understand a little bit your  
18 Opinion No. 2. I don't want to spend too much time  
19 talking about the DoD safety manual.

20 But your Opinion No. 2 at page 5, you say, 04:00:56  
21 "I have seen no clear evidence."

22 Does the phrase "clear evidence" have some  
23 meaning in your line of work? Is that a term of art  
24 or something else?

25 A. Well, what I would say is I saw no direct 04:01:10

1 testimony that they did not comply. I did see 04:01:14  
2 testimony that they did.

3 But I think the strongest point there is  
4 the findings of fact and conclusions, that the court  
5 held, in 2010, that this work was done in 04:01:25  
6 concordance with that manual, and there were  
7 inspectors on-site that were inspecting not just how  
8 the rocket was made, but how they were managing the  
9 waste and adhering to the safety manual.

10 That's a quote right out of their findings 04:01:42  
11 and conclusions. And I didn't find anything that  
12 would cause me to say the court got it wrong.

13 Q. Okay. The DoD safety manual that you're  
14 referring to, does that require good housekeeping  
15 practices with respect to the use and disposal of 04:02:01  
16 hazardous substances?

17 A. Absolutely. It tells you how you can  
18 dispose of the propellant. It tells you where they  
19 want you to put like the liquid wastes and so forth.  
20 It is indicative of the current thought processes in 04:02:20  
21 the '60s, when that manual was written.

22 It is not -- it would not be compliant  
23 with current RCRA regulations. They didn't exist at  
24 that time.

25 Q. Right. 04:02:46

1 nitroglycerine for fireworks. 05:15:33

2 Q. And you're focusing on the end product?

3 Or did you consider the machinery used in the  
4 processes that were occurring between '34 and '42?

5 A. I'm focusing on the end products, in part, 05:15:57

6 because I'm looking at where would you need a super  
7 clean metal surface. And it becomes a real issue  
8 only when you get to something that will damage the  
9 function of the product if it were not cleaned to

10 that level. Dynamite is put into paper. There are 05:16:15

11 no metal surfaces that you are worried about there.

12 The same is true of the fireworks.

13 So it's a combination of -- I'm unaware of  
14 anything in the production of those products that

15 would have required a super clean metal surface for 05:16:40

16 fear of loss of functionality of the final product.

17 Q. And if we wanted to get a list from you of

18 what products you think were manufactured out there

19 between '34 and '42 -- is there some conjecture on

20 your part? Are you making some assumptions? Or do 05:17:02

21 you believe you've seen good documentation that

22 would tell us whether fuses and certain types of

23 detonators -- the specific type of explosives and

24 that sort of thing? You don't actually know the

25 specific types of products that were made there 05:17:14

1 during that period, do you? 05:17:18

2 A. I know what has been listed in the

3 findings of and fact and conclusions and what was

4 listed in the expert testimony of Brigham and Zoch.

5 If they missed some items, I'm not aware of it. 05:17:31

6 Q. Okay. That's helpful.

7 MR. RICHARD: Why don't we take five minutes

8 and I'll see if I can wrap this up.

9 Off the record.

10 THE VIDEOGRAPHER: Off the record. The time is 05:17:44

11 5:17 p.m.

12 (Recess taken.)

13 THE VIDEOGRAPHER: Back on the record. The

14 time is 5:26 p.m.

15 BY MR. RICHARD: 05:26:36

16 Q. Just want to show you a couple other

17 documents here before we call it a day, sir.

18 (Defendant's Exhibit 271 was marked.)

19 BY MR. RICHARD:

20 Q. We've marked as Exhibit 271, and it should 05:26:44

21 be in your system there, part of a remedial

22 investigation work plan from 1995.

23 A. I have it.

24 Q. And basically --

25 MR. BLUM: Wait a minute while I get it. 05:26:59

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1 Q. Is it fair to say that a lot of your 05:36:31  
2 opinions in this case, Mr. Dawson, rely in part on  
3 materials you haven't seen?

4 A. If you mean primary source materials  
5 because I'm referencing the findings of fact and 05:36:48  
6 conclusions or the expert reports of other  
7 individuals from earlier on, I take those documents  
8 at face value. I have not seen the antecedent  
9 documents on which they're based.

10 Q. Okay. So the answer is, yes, you're 05:37:09  
11 relying on having not seen certain primary source  
12 materials to draw conclusions based on the absence  
13 of evidence?

14 A. That's correct. I've requested sources of  
15 prime documents, but to the best of my knowledge, 05:37:30  
16 nobody has been able to locate those documents.  
17 That's one of the reasons why I've relied on work of  
18 my earlier experts who apparently had access to more  
19 documents than we do.

20 Q. And are there any principles in your line 05:37:43  
21 of work that come to bear where a scientist or  
22 someone applying scientific methodologies purports  
23 to rely on the absence of evidence to draw  
24 conclusions?

25 A. Sometimes that's the best evidence we 05:38:05

1 time, it's your opinion that once it's in water, it 05:51:38  
2 loses its status as a hazardous waste?

3 A. That's stated right in RCRA. It says if  
4 it is no longer ignitable or reactive in its current  
5 state, it is no longer a hazardous waste. 05:51:52

6 Q. So that's an example where if a judge  
7 concluded, as the judge did in this case earlier,  
8 that perchlorate was a hazardous substance, that you  
9 would disagree with the judge's findings?

10 MR. BLUM: Objection; misstates what the 05:52:11  
11 judge's ruling was. He didn't rule that.

12 BY MR. RICHARD:

13 Q. Did you read the decision in this case  
14 from Judge Matz regarding perchlorate?

15 A. I have read the entirety of the findings 05:52:28  
16 of fact and conclusions.

17 Q. But that was in the case against the  
18 government?

19 A. Correct.

20 Q. Did you read his decision on Whittaker's 05:52:35  
21 summary judgment motion involving my client, the  
22 water agency, and perchlorate?

23 A. I believe I may have seen the response on  
24 the summary judgment issue. If it's listed in the  
25 back of my report, I definitely did. But that 05:52:59

1 I, the undersigned, a Certified Shorthand  
2 Reporter of the State of California, do hereby  
3 certify:

4 That the foregoing proceedings were taken  
5 before me at the time and place herein set forth;  
6 that any witnesses in the foregoing proceedings,  
7 prior to testifying, were administered an oath; that  
8 a record of the proceedings was made by me using  
9 machine shorthand which was thereafter transcribed  
10 under my direction; that the foregoing transcript is  
11 a true record of the testimony given.

12 Further, that if the foregoing pertains to  
13 the original transcript of a deposition in a Federal  
14 Case, before completion of the proceedings, review  
15 of the transcript ( ) was (X) was not requested.

16 I further certify that I am neither  
17 financially interested in the action nor a relative  
18 or employee of any attorney of any party to this  
19 action.

20 IN WITNESS WHEREOF, I have this date  
21 subscribed my name this 6th day of October, 2020.

22  
23   
24

25 ANRAE WIMBERLEY, CSR No. 7778

**EXHIBIT DD**



UNITED STATES DISTRICT COURT  
FOR THE CENTRAL DISTRICT OF CALIFORNIA

CASTAIC LAKE WATER AGENCY;  
NEWHALL COUNTY WATER DISTRICT;  
SANTA CLARITA WATER COMPANY;  
and VALENCIA WATER COMPANY,

Plaintiffs,

vs.

WHITTAKER CORPORATION;  
SANTA CLARITA LLC;  
REMEDICATION FINANCIAL, INC.  
and DOES 1-10, Inclusive,

Defendants.

AND RELATED CROSS-ACTIONS.

COPY

No. 00-12613-AHM  
(RZx)

DEPOSITION OF JACK H. ARNOLD

Los Angeles, California

April 5, 2002

Reported by:  
BARBARA BROSNAN, RMR, CRR,  
CSR NO. 2202

**BARBARA BROSNAN & ASSOCIATES**  
CERTIFIED SHORTHAND REPORTERS  
5534 Kester Avenue  
Van Nuys, California 91411  
(818) 905-5109

1 Q. And how was trichloroethylene used on the Bermite  
2 Powder Company site? TCE.

3 A. That is a degreasing material. Is that a  
4 degreasing material or what is it? I don't know.

5 Q. Do you know whether trichloroethylene was ever  
6 used on the site?

7 A. Yes.

8 Q. When was it used on the site?

9 A. For cleansing the projectiles. The projectiles  
10 were sent to us from other manufacturers all over the United  
11 States, and they were sent there with grease, and we had to  
12 degrease the shells.

13 Q. And which projectiles are you referring to?

14 A. 20-millimeter.

15 Q. Was TCE used for any of the other manufacturing  
16 processes on site?

17 A. No.

18 Q. How much TCE was used in the manufacture of  
19 20-millimeter rounds?

20 A. I have no idea.

21 Q. Did the Bermite Powder Company ever have problems  
22 relating to the TCE used on site?

23 MR. MUTHIG: Objection; vague.

24 BY MR. YAMAMOTO:

25 Q. You can still answer when he objects. If you

1 STATE OF CALIFORNIA )  
2 ) ss.  
3 COUNTY OF LOS ANGELES )  
4

5 I, Barbara Brosnan, CSR No. 2202 and deposition  
6 officer for the State of California, do hereby certify:


7 That the foregoing deposition of JACK H. ARNOLD  
8 was taken before me pursuant to Subpena at the time and place  
9 therein set forth, at which time the witness was put under  
10 oath by me;

11 That the testimony of the witness and all  
12 objections made at the time of the examination were recorded  
13 stenographically by me and were thereafter transcribed;

14 That the foregoing deposition is a true record of  
15 the testimony and all objections made at the time of the  
16 examination.

17 I hereby certify that I am not interested in the  
18 outcome of the action.

19 IN WITNESS WHEREOF, I have subscribed my name this  
20 16th day of April, 2002.

21  
22   
23 BARBARA BROSNAN, CSR NO. 2202  
24 Deposition Officer in and for  
25 the State of California

**EXHIBIT EE**





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## **Expert Report of Gary Hokkanen**

In the Matter of:

**Santa Clarita Valley Water Agency, v. Whittaker Corporation and  
Does 1-10, Inclusive**

**United States District Court, Central District of California  
Case No. 2:18-CV-6825-GW (RAOX)**

**Whittaker Corporation v. Keysor-Century Corporation and Saugus  
Industrial Center**

**United States District Court, Central District of California  
Case No. 2:18-CU-06825-GW-RAO**

**Prepared by:**

**Gary Hokkanen, M.S.**

**Principal Hydrogeologist**

**EKI B90086.00**

**3 August 2020**

Bermite Site has migrated in groundwater in a northwesterly direction. Figure 42 is Figure 5-4 from the CH2MHill VOC Report and shows the extent of the perchlorate plume from the Bermite Site (the orange area of Figure 42). VOCs from the Bermite Site followed the same pathway as the perchlorate.

The CH2MHill VOC Report hypothesized that the VOCs from the Bermite Site migrated along different pathways than the perchlorate (see Figure 5-5 in the CH2MHill VOC Report). Specifically, the CH2MHill VOC Report hypothesizes that VOCs did not migrate in a northwesterly direction through the western boundary of the Site, even though this is the pathway perchlorate migrated. As discussed above, chemicals dissolved in groundwater, released at the same location do not migrate along different pathways. The CH2MHill Report hypothesized VOC migration pathways are not supported by the water level or water quality data collected at the Bermite Site. The CH2MHill VOC Report calls these pathways “conceptual” and Mr. Lechler testified that the VOC pathways presented in the VOC Report were hypothetical and that more data would be needed to determine if they actually exist. Mr. Lechler testified that the additional information was needed because it couldn’t be concluded that the Bermite Site was the source of VOCs in Saugus 1 and Saugus 2. He testified that the recommended data has not been collected.

It is my opinion that perchlorate and VOCs released from the source areas on the Bermite Site followed the same migration pathway in the unsaturated zone and in groundwater.

### 5.3 Opinion 3

**Due to the different migration rates of perchlorate and VOCs in groundwater, releases of perchlorate from the source areas have migrated faster and further than VOCs.**

As discussed in Section 4.6, there has been considerable research examining the migration of dissolved chemicals in groundwater. Perchlorate has been shown to migrate essentially at the same rate as groundwater. VOCs, such as PCE and TCE, on the other hand, have been found to migrate at a slower rate than the rate of groundwater. A number of representative research papers are included in Exhibit A that discuss the differences in migration rates of perchlorate, PCE and TCE. This research has found that TCE and PCE move 2 to 10 times slower than the rate of groundwater. The CH2MHill VOC Report agreed, stating: “The retardation factors for TCE and PCE in sand and gravel aquifers low in organic matter, similar to aquifer materials of the study area, are expected to fall between 1 and 10 (Mackay, et al., 1985).” For example, the Stanford/Waterloo study discussed in Section 4.6 found that PCE migrated approximately 5 times slower than groundwater in a uniform clean sand aquifer.

Expert Report of Gary Hokkanen

The CH2MHill VOC Report stated that the “overall distribution of TCE in the Saugus Formation is very similar to the distribution of perchlorate.” Figure 42, Figure 5-4 from the CH2MHill VOC Report, shows the extent of the perchlorate plume and presumably shows the extent of the TCE plume from the Bermite Site. The extent of perchlorate in groundwater at and downgradient of the Bermite Site is well supported by perchlorate data in monitoring and groundwater production wells. However, the extent of the TCE plume shown in Figure 42 is not supported by the TCE data, specifically the dashed line downgradient of the Bermite Site. The use of the dashed line means that there is uncertainty with the line. As discussed in Sections 4.2.2.5 and 4.2.2.6, the VOC detections in monitoring and groundwater production wells are not from the Bermite Site.

As the CH2MHill VOC Report stated, “similar sources and migration pathways could exist for perchlorate and TCE impacts in Saugus formation groundwater.” Contaminants released at the same location dissolved in groundwater would flow along with the groundwater and follow the same pathway as discussed in Opinion 2. They both simply travel along with and in the same direction as the groundwater. An examination of Figure 42 from the CH2MHill VOC Report shows that monitoring locations on the western boundary of OU-4, north of OU-4, and south of OU-4 are open circles, meaning that TCE was not detected at these locations. Dissolved plumes of TCE do not have gaps as seems to be indicated on Figure 42. The TCE data collected at the Bermite Site, discussed in detail in Sections 4.2.2.3, 4.2.2.4, and 4.2.2.5, shows that the PCE and TCE plume has not extended as far downgradient of OU-4 as shown on Figure 42. The TCE data shows that the solid blue line in Figure 42, east of the western boundary of OU-4, is the extent of the TCE plume.

The overall distance the perchlorate plume has migrated is approximately 2 to 2 ½ times the distance the TCE plume has migrated. This difference in migration distances is due to the retardation of TCE compared to perchlorate. The retardation of TCE at source areas first occurred in the unsaturated zone as the dissolved TCE moved downward to the water table and then as it migrated with the groundwater. The TCE released at the Bermite Site has migrated approximately 2 to 2 ½ times slower than perchlorate. As discussed above, this difference in migration rates is supported by the research done on the retardation of these chemicals in groundwater. The CH2MHill VOC Report stated that the retardation of PCE and TCE was up to 10 times more than perchlorate.

It is my opinion that based on the data collected at the Bermite Site, perchlorate and VOCs were released in the same areas and due to the differences in their migration rates in groundwater, perchlorate has migrated further than TCE and PCE.

**SIC did not comply with DTSCs request under the VCA as required by 42 U.S.C. 9601 (40) (B) (vii)**

CERCLA 42 U.S.C. 9601 (40) (B) (vii) requires compliance with any request for information or administrative subpoena. For the SIC Site, meeting this requirement means complying with DTSC requests and directives, including the VCA.

SIC signed a VCA with the DTSC in October 2007. DTSC agreed to oversee the characterization and cleanup of the Site proposed by SIC and SIC agreed to comply with the terms and conditions of the VCA, including the VCA schedule.

On September 22, 2011 DTSC sent out a Notice to Terminate the VCA to Hunt Braley, counsel to SIC, and Alex Palmer, consultant to SIC. The letter stated that “DTSC is terminating the agreement due to the lack of satisfactory investigation progress, poor project proponent responsiveness, and environmental concerns with known impacts (vinyl chloride) to soil and groundwater. SIC has failed to properly characterize the full nature and extent of contamination resulting from past operations on the Site and failed to respond to repeated requests by DTSC staff to negotiate the terms of an access agreement to complete the groundwater investigation along the southwestern perimeter of the contaminant plume. In addition, engineering and geological work performed at the Site and associated deliverables are not in conformance with applicable state law including but not limited to Business and Professions Code Sections 6735 and 7835.”

**SIC did not meet the requirement of 42 U.S.C. 9601 (40) (B) (vii).**

Saugus Industrial Center failed to meet several of the statutory requirements necessary to establish itself as a Bona Fide Prospective Purchaser (BFPP), as such has not met the criteria to qualify as a BFPP as set out in 42 U.S.C. 9601 (40).

## **5.8 Opinion 8**

**There are other potential sources that could be contributing VOCs to the Water Agency’s groundwater production wells.**

As discussed in Section 4.5, the CH2MHill VOC Report did not consider or eliminated sites that potentially contributed TCE and PCE to groundwater. For example, a dry cleaner operated near Saugus 2 in the 1960’s. The CH2MHill VOC Report did not identify this Site nor has any investigation of this Site been conducted. Dry cleaners in the 1960’s used PCE and dry cleaners from this era have been found to impact soil and groundwater from the improper handling and disposal of PCE.



Expert Report of Gary Hokkanen

In the CH2MHill VOC Report, Sites were eliminated as potential sources even though inadequate information existed to make this determination. The Thatcher Glass Manufacturing Company, the Saugus/Newhall Airport, Dry Cleaners at Granary Square and other dry cleaners were all located within the capture zone of the Water Agency's groundwater production wells. Either no data or inadequate data exists to determine if these Sites contributed TCE and PCE to groundwater.

In addition, the TCE and PCE groundwater data suggests that there are other potential sources in the vicinity of the Water Agency's groundwater production wells. TCE and PCE data downgradient of Saugus 1 and Saugus 2 suggest that there are unidentified sources in this area. As discussed in Section 4.5, TCE data from monitoring wells DW-1B, Mall A, and Library Well B suggest a source of TCE in the vicinity of these wells.

It is my opinion that there are other previously unidentified Sites that are contributing TCE and PCE to the Water Agency's groundwater production wells.

## 5.9 Opinion 9

**Based on the available data, other previously unidentified sources could be contributing VOCs in the Water Agency's distribution system.**

Section 4.1.3 discusses TCE and PCE data collected from the Water Agency's distribution system. The water from the Perchlorate Treatment Plant is blended with water from Castaic Lake. TCE and PCE data collected from turnouts in the distribution system shows periodic detections.

The Water Agency uses chloride concentrations measured in the effluent from the Perchlorate Treatment Plant and the Castaic Lake water and the chloride concentrations in the water at the turnouts to estimate the dilution of the water from the Perchlorate Treatment Plant. An examination of the estimated dilution ratios at the turnouts shows large variations in a single sampling event. This variability of dilution ratios suggests that the predicted ratios are not reliable. I have seen no evidence that the chloride ratio method of predicting the dilution at the turnouts has been validated by the Water Agency.

The estimated dilution ratio is used to predict the TCE and PCE concentrations at the turnouts. These predicted TCE and PCE concentrations are compared to the measured values at the turnouts. There are times in which the predicted dilution ratios do not correlate with the VOC concentrations at the turnouts. An examination of the predicted TCE and PCE to the measured values shows variable results. The chloride derived ratios sometimes predict a detection and

no VOC is detected and other times the predicted VOC concentration is close to the measured value and other times its significantly different.

As discussed in Section 4.1.3, PCE concentrations in some of the samples are higher than those found in the effluent from the Perchlorate Treatment Plant. Between 2011 and 2015, PCE was detected at turnouts over the concentration from the plant effluent 23 times. For example, in May 2012 the PCE concentrations at turnout SC-1 were 5.7, 7.9, and 9.9 µg/L on three consecutive readings. And PCE was detected at a concentration of 17.0 µg/L at turnout SC-1 on July 16, 2012.

The Castaic Lake Water Agency (CLWA) published a report on March 21, 2013 describing an investigation into these PCE detections at turnout SC-1. The report stated that “CLWA is confident that Saugus 1 and 2 wells are not the source of the recent episodes of high PCE detection.” CLWA stated that the PCE detections may have been associated with the former Flamingo Cleaners site which was located about 200 yards southeast of turnout SC-1. In 2014 and 2015, after modifications to the piping system, PCE was detected at turnout SC-1 at concentrations higher than the plant effluent 14 times.

Mr. Leserman, Senior Engineer with the Santa Clarita Valley Water Agency, testified that the PCE detections at SC-1 had nothing to do with the Whittaker Site. The Water Agency didn’t determine if the detections were from a nearby dry cleaner, Flamingo Cleaners, or from some other source. The turnout data suggests that there are sources of PCE in the water supply other than Saugus 1 and Saugus 2. The Water Agency has concluded on several occasions that the Perchlorate Treatment Plant was not the source of the VOC detections at the turnouts and the source could not be determined. The turnout data suggests that there are unidentified sources of PCE in the water supply, other than Saugus 1 and Saugus 2.

It is my opinion based on the available data that other previously unidentified sources could be contributing VOCs in the Water Agency’s distribution system.

Expert Report of Gary Hokkanen

## 6. SIGNATURE

The opinions in this report are based on my education, training, years of experience in environmental consulting, and the materials listed in Exhibit A. I may revise these opinions as additional documents, testimony, or discovery responses become available.

A handwritten signature in cursive script, reading "Gary Hokkanen", is written over a horizontal line.

Gary Hokkanen, MS

Vice President

3 August 2020

Date

**EXHIBIT FF**



**SANTA CLARITA VALLEY WATER AGENCY**

**v.**

**WHITTAKER CORPORATION, ET AL.**

**Expert Report**

**of**

**Steven J. Luis, CE, PE**

Submitted on behalf of:  
Whittaker Corporation



---

Steven J. Luis, CE, PE  
Principal

Ramboll  
5 Park Plaza, Suite 500  
Irvine, California 92614

August 3, 2020

### **3. BASIS OF OPINIONS**

#### **3.1 Opinion 1**

SCVWA should have understood that sources of VOCs, including TCE and PCE, were present in the area at the time production Wells S-1, S-2, V-201, and V-205 were installed.

##### **3.1.1 Basis for Opinion 1**

As summarized above, production Wells S-1, S-2, V-201, and V-205 were installed between 1988 and 1999.

In December 1981, the California Department of Water Resources released Water Well Standards: State of California (1981 Well Standard) (CDWR, 1981). The 1981 Well Standard noted the condition of proximity of a well to "sources of pollution or contamination or downstream from them so that the well can be directly affected by flow from these sources" (CDWR, 1981, p. 4 and Figure 1). In addition, the 1981 Well Standard indicated that "All wells shall be located an adequate horizontal distance from potential sources of contamination and pollution." Potential sources of pollution include "sewage and industrial ponds" and "disposal sites" (CDWR, 1981, pp. 26-27).

In 1986, RCSA noted that "industrial [land] uses occupy the largest surface areas in the region" (RCSA, 1986, p. 21 and Plate 2). The presence in the study area of industrial facilities as well as oil fields dates back to the 1870s. RCSA listed the following industrial facilities in the study area:

- Lockheed Corporation
- Valencia Industrial Park
- Industrial structures along the South Fork of Santa Clara River
- Thatcher Glass
- Whittaker-Bermite
- Automobile Raceway
- Lubrication Company of America
- Space Ordnance Systems
- Micronics International

The following three companies listed above were also identified as "possible" USEPA Superfund sites: Lubrication Company of America, Space Ordnance Systems, and Thatcher Glass Company. RCSA also noted the presence of old, abandoned, and/or currently active landfills and/or "mudsump" disposal areas from oil field operations. Finally, RCSA noted major discharges of treated municipal and industrial wastes to the Santa Clara River at the Los Angeles County Sanitation Districts' Plants 26 and 32 (RCSA, 1986, pp. 22-23).

RCSA's 1988 Report noted that local land uses include oil field activities and "various old and new industrial/manufacturing facilities; testing laboratories; abandoned and/or currently active landfills; agricultural areas; and unsewered regions" (RCSA, 1988, p. 11). RCSA reported most oil field wastewater was injected into "underlying rock formations" but that previously wastewater had been discharged into ponds, where it was allowed to evaporate as well as "percolate into underlying strata," as well as local drainage channels. RCSA pointed out that "a comprehensive investigation of the completion and abandonment practices at the various oil fields in the area was beyond the scope of this study" (RCSA, 1988, p. 45).

RCSA's 1986 and 1988 Reports indicated the direction of the groundwater gradient was toward the northwest and showed that the location of the Whittaker Site was generally upgradient of S-1, S-2, V-201, and V-205 (RCSA, 1988, pp. 51-52 and Plate 7 and RCSA, 1986, Plate 2). At the time these wells were installed, SCVWA understood that the Whittaker Site was located at a higher elevation than the wells (Slade, 2/6/20, pp. 77-80).

SCVWA should also have been aware of the former Keysor/Saugus Industrial Center facility located at 26000 Springbrook Avenue, Saugus (SIC Site). In addition to being one of the "industrial structures along the South Fork of Santa Clara River" reported by RCSA, as noted above, the complex of industrial buildings, of which SIC is a part, is plainly visible from the location of S-2 (2/4/20 Site visit). Historical manufacturing activities dating back to 1958 include production of polyvinyl chloride (PVC) resins. More than 50 million pounds of VOCs were reportedly used annually. Raw materials used included vinyl chloride, vinyl acetate monomers, TCE, and toluene. 1,2-dichloroethane (1,2-DCA) was used to clean reactors. An unlined pond was used for disposal liquids and solids through at least 1977. Housekeeping issues were reported, including releases, unpermitted discharges, and fines (Weston, 2006, pp. 1-8).

Investigation and remediation of the SIC Site is ongoing under the oversight of DTSC (Apex, 2019, p. 1). As ongoing investigation and remediation activities show, impacts of VOCs, including TCE and PCE, at the SIC Site are extensive (RAMCO Environmental Inc., 2010; Apex, 2019).

In the late 1980s SCVWA was aware of potential contamination issues related to underground storage tanks and dry cleaner sites (Slade, 2/6/20, pp. 65-66). As summarized in the February 2020 report *Historical Uses of Trichloroethylene (TCE) and Tetrachloroethylene (PCE) near Five Drinking Water Wells, Santa Clarita, CA* by Archeological/Historical Consultants (AHC Report), the dry cleaners listed below and shown in Figure 3 were located within a two-mile radius at the time production Wells S-1, S-2, V-201, and V-205 were installed (AHC, 2020a, pp. 8-11).

| Dry Cleaner  | Address                         | Approximate Dates of Operation |
|--|---------------------------------|--------------------------------|
| The English Cleaners                               | 23360 Valencia Boulevard        | 1994-2003                      |
| Glory Cleaners                                     | 23142 Valencia Boulevard.       | 1995-1999                      |
| Granary Cleaners/<br>Magic Cleaners                | 25840 McBean Parkway            | 1986-1994<br>1998-2019         |
| Flamingo Cleaners (#1)/<br>Carriage Trade Cleaners | 26512 Bouquet Canyon Road       | 1985-2007<br>1999              |
| One Hour Martinizing                               | 26830 Seco Canyon Road          | 1971-2020                      |
| Village Cleaners                                   | 25864 Tournament Road, Valencia | 1994-2019                      |
| Carriage Route/Wardrobe<br>Maintenance             | 25040 Ave Tibbitts, Valencia    | 1998-2003                      |

In addition to dry cleaners, the AHC Report identified several other businesses that may have used TCE and/or PCE at the time production Wells S-1, S-2, V-201, and V-205 were

installed. The existence of these businesses would also have been apparent to people familiar with the area. These businesses are shown in Figure 3 and are listed below:

- Newhall-Saugus Airfield/Airport, operated from approximately 1928-9 until approximately 1964 (AHC, 2020a, pp. 12-13).
- Saugus Speedway and Swap Meet, 22500 Soledad Canyon Road, operated from approximately 1939 until 1995.
- Valencia Industrial Center Business Park, operated from the 1970s until the present.
- Saugus Substation, 25100 Magic Mountain Parkway, operated from approximately 1924 until the present.
- Electrofilm Facility, 27727 Avenue Scott, operational period not reported, but leak of "solvents" reported in 1983.

In the late 1980s SCVWA was aware of potential contamination issues related to underground storage tanks and dry cleaner sites (Slade, 2/6/20, pp. 65-66). This awareness is not surprising since potential contamination issues were reported in the local press during this time (AHC, 2020b, pp. 6-7). Moreover, SCVWA understood that VOCs, including TCE, related to industrial activities had been detected in more than 25% (6 out of 22 sampled) of production wells used by local water purveyors. RCSA reported that the sources of the VOCs had not been determined and that "further work would be necessary to identify possible source(s)" (RCSA, 1986, pp. 63-65).

RCSA's 1988 Report concluded by noting that "[i]t must be recognized that there are inherent risks in the construction of new wells in this entire region due to the possibility of encountering contaminants in groundwater relating to petroleum occurrences, prior industrial and/or manufacturing facilities, or natural conditions." RCSA acknowledged that if groundwater contamination were present in the vicinity of a well, it could take "hours, days, weeks or even months of pumping at high rates to be intercepted" (RCSA, 1988, pp. 98-99).

In consideration of the issues identified, RCSA's 1988 Report recommended that SCVWA

Become cognizant of present and future land use in the area; work with the RWQCB to recognize landfill problems, runoff from hazardous waste sites, and even migration of gasoline from leaky underground service station tanks. Such potential sources of contamination can adversely affect the alluvium and the surface exposures of the Saugus Formation. Locate all industrial dischargers on a map and determine the types and amounts of such discharges (RCSA, 1988, p. 103).

However, despite RCSA's recommendation and SCVWA's general awareness of the potential for contamination in the vicinity of its production wells, SCVWA did none of these things (Slade, 2/6/20, pp. 51-52, 65-68, 95-98). There does not appear to be any indication SCVWA considered possible steps such as investigating potential sources or locating production wells farther from potential sources. Instead, SCVWA limited consideration to logistical concerns such as the underlying aquifer and production capacity/need, property ownership and drilling feasibility, nearby schools, and access to electricity (Slade, 2/6/20, pp. 82-83).



### **3.2 Opinion 2**

SCVWA should have understood that during periods of non-operation, production Wells S-1, S-2, V-201, and V-205 would serve as preferential pathways conveying impacted groundwater deeper into the Saugus Formation.

#### **3.2.1 Basis for Opinion 2**

As summarized above, the production wells screened in the Saugus Formation (i.e., S-1, S-2, V-201, and V-205) were constructed either with multiple well screen intervals (S-1, S-2, and V-201) or with a continuous screen (V-205). Well screens for S-1, S-2, V-201, and V-205 extended over distances of hundreds of feet, spanning HSUs S-III, S-V, and S-VII. Production wells screened at these depths would facilitate movement of impacted groundwater deeper into the Saugus Formation.

In addition, as noted above, at the time production wells S-1, S-2, V-201, and V-205 were installed SCVWA understood that the Whittaker Site was located both upgradient from and at a higher elevation than production wells S-1, S-2, V-201, and V-205. As was well understood by hydrogeologists at the time, groundwater would generally flow from topographically high areas toward topographically low areas (see, for example, Freeze and Cherry, 1979 and Tolman, 1937).

The potential for wells to serve as preferential pathways or “superhighways” that convey impacted groundwater vertically has been well understood by groundwater professionals for many years. In addition to general physical considerations (i.e., the wells provide a pathway of relatively little resistance compared to adjacent geologic materials), the 1981 Well Standard indicates that one of five ways in which wells can facilitate impairment of groundwater quality is by “allowing the interchange of water with one or more aquifers and thus significantly impairing the quality of water in those aquifers.” In addition, the 1981 Well Standard notes that “sometimes the source of pollution [to a well] is a nearby abandoned well” (CDWR, 1981, p. 4 and Figure 2). The 1981 Well Standard also indicates that a well that is no longer useful must be destroyed to “assure that the ground water supply is protected and preserved for further use.” Alternatively, if the well owner intends to use the well again, the owner shall maintain the well to prevent “impairment of quality of water in the well or in the water-bearing formations penetrated” (CDWR, 1981, PDF p. 32). The 1981 Well Standard also indicates “In areas where the interchange of water between aquifers will result in a significant deterioration of the quality of water in one or more aquifers, or will result in a loss of artesian pressure, the well shall be filled and sealed so as to prevent such interchange” (CDWR, 1981, PDF p. 33). The facilitation of downward migration of impacted groundwater such as occurred in the production wells screened in the Saugus Formation would have been understood by groundwater professionals no later than the time of publication of the 1981 Well Standard.

Mr. Lechler, a senior hydrogeologist who was employed by CH2M HILL from 2002 until 2017, indicated that during periods of nonoperation such as those experienced by S-1 and S-2, groundwater could migrate vertically through the gravel packs of S-1 and S-2 (Lechler, 9/25/19, p. 83).

In 1986, RCSA reported to SCVWA that “it is highly probable that hydraulic continuity exists between the Alluvium and the Saugus Formation within which it is in direct contact” (RCSA, 1986, p. 107). RCSA went on to note that one of the “potential detriments” of maximizing groundwater storage in the Alluvium were “increased deep percolation of water to the Saugus Formation due to increased heads in the alluvium” (RCSA, 1986, p. 111).

In 2003, RCSA conducted a flow meter survey and a FloVision survey in S-1 under static conditions. Based on flow meter survey results, RCSA reported groundwater flow into and downward in S-1 between depths of 510 and 660 feet bgs and between 1500 and 1610 feet bgs. Groundwater was reported to flow out of the well between depths of 660 and 1500 feet bgs and below 1600 feet bgs. RCSA reported FloVision survey results to be generally similar to the flow meter survey, with the exception of the 1200-1300 feet bgs interval in which flow was determined to be into S-1 (RCSA, 2004, pp. 46-48).

RCSA also conducted a FloVision survey in S-2 under static conditions. Based on FloVision survey results, RCSA reported groundwater flow into and downward in S-2 beginning at a depth of approximately 551 feet bgs, with a maximum inflow rate at a depth of approximately 900 feet bgs. Inflow rates decreased with depth until no flow was detectable below 1519 feet bgs (RCSA, 2004, pp. 48-49).

RCSA also conducted a flow meter survey in V-157 under static conditions. RCSA reported groundwater to flow into the well "over nearly the entire perforation interval in which the flow meter survey was conducted," between depths of 586 and 1940 feet bgs. It was concluded that water was likely flowing outward into the surrounding aquifer between depths of 1932 and 2008 feet bgs (RCSA, 2004, pp. 49-50).

Based on the results of these flow meter and FloVision surveys, by 2003 RCSA and SCVWA would have understood that S-1, S-2, V-157 and other inoperative production wells screened in the Saugus Formation were conveying impacted groundwater from shallow to deeper zones in the Saugus Formation.

The results of the flow meter and FloVision surveys are consistent with the reports *Saugus Formation Volatile Organic Compound Investigation Report Santa Clarita, California* by CH2M HILL dated October 2015 (VOC Investigation Report) and *Updated Groundwater Evaluation and Technology Screening Report Eastern Santa Clara Subbasin Groundwater Study, Santa Clarita, California* by CH2M HILL dated March 2015 (Updated Screening Report). The VOC Investigation Report indicated that groundwater gradients in the Saugus Formation are generally downward with variations near production wells (CH2M HILL, 2015b, p. 2-2). The VOC Investigation Report also showed that production well pumping influenced groundwater levels in overlying HSUs (CH2M HILL, 2015b, Figure 2-2). Similarly, the Updated Screening Report indicated that groundwater gradients in the Saugus Formation were generally downward, with the exception of the gradient between HSUs SVII and SVIII due to production well pumping (i.e., production wells are generally screened in SVII but not SVIII) (CH2M HILL, 2015a, p. 3-3).

The results of the flow meter and FloVision surveys and consultants' reports are also consistent with groundwater level data at the Whittaker Site and in the vicinity of production Wells S-1, S-2, V-201, and V-205. Review of available groundwater data shows that downward vertical gradients are generally present throughout the vicinity of production Wells S-1, S-2, V-201, and V-205 for the entire period of record, approximately 2004-2018 (AECOM, April 2019, Appendix B2). The vertical directions of the gradients are summarized in Figure 4.

The available information and data indicate it is likely that production Wells S-1, S-2, V-201, and V-205 served as preferential pathways that conveyed impacted groundwater deeper into the Saugus Formation. SCVWA should have understood the inoperative wells would serve as preferential pathways and that there were steps that could be taken to reduce the likelihood these wells would serve as preferential pathways (e.g., abandoning the wells). There does not appear to be any indication that SCVWA took such steps.